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ABSTRACT

This volume discusses the conceptualization and measurement of the health status of children (0 to 13 years of age) in terms of physical, mental, and social health and general health perceptions. The discussion is based on Health Insurance Study (HIS) questionnaire data collected from a sample of 8000 people (enrolled in one of the HIS insurance plans) from five sites across the United States: Seattle, Washington; Fitchbur and Franklin Counties, Massachusetts; and Georgetown and Charleston Counties, South Carolina. Chapter 2 includes a literature review that describes the ways other investigators have conceptualized and measured children's physical, mental, and social health, and general health ratings, and critically evaluates the measures in terms of their apparent usefulness as indicators of health status in general populations of children. Chapter 3 describes the content of health status measures fielded for children in the HIS, summarizes demographic and socioeconomic characteristics for children and their families in HIS sites, and outlines the plan of analysis used to scale measures and study their reliability and validity. Chapter 4 presents the results of HIS scaling analysis for children, including descriptive statistics for scale scores, reliability and validity of the scales that were developed, and sociodemographic correlates of health status. Finally, Chapter 5 discusses the findings of children's HIS measurement studies as compared with those reported in the literature, describes additions to the HIS mental health battery, and suggests further analyses and refinements in measurement of child health status in general populations of children. (Author/MP)

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CONCEPTUALIZATION AND MEASUREMENT OF HEALTH FOR CHILDREN IN THE HEALTH INSURANCE STUDY

PREPARED UNDER A GRANT FROM THE U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

MARVIN EISEN, CATHY A. DONALD, JOHN E. WARE, JR., ROBERT H. BROOK

R-2313-HEW

MAY 1980

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PREFACE

The Rand Health Insurance Study (HIS), supported by a grant from the U.S. Department of Health, Education, and Welfare, is a social experiment being conducted in six sites across the United States to investigate the effects of different health care financing arrangements (differing coinsurance and deductible rates and fee-for-service practice versus prepaid group practice) on the use of personal medical care services, quality of care, satisfaction with care, and health status. Some 8000 people in 2750 families are enrolled in the experiment for periods of 3 or 5 years; health status is assessed for each person on entering the experiment, annually during the experiment, and on leaving.

The development of reliable and valid measures of assessing child and adult health status was a necessary prerequisite to an examination of the effects of health care financing on health status in the Health Insurance Study. This report contains detailed information on the conceptualization and measurement of the health status of children (ages 13 and under) in terms of physical, mental, and social health and general health perceptions. The conceptualization and measurement of physiologic health for children are discussed in a forthcoming Rand study by Brook, Goldberg, Harris, et al., *Conceptualization and Measurement of Physiologic Health for Children in the Health Insurance Study*, R-2519-HEW.

Because physical, mental, and social health and general health perceptions components of health are assessed most comprehensively in enrollment questionnaires fielded after the first site (Dayton, Ohio) became operational, the analyses are based primarily on data from the remaining five sites: Seattle, Washington; Fitchburg and Franklin County, Massachusetts; and Charleston and Georgetown County, South Carolina. For analytic purposes, Fitchburg and Franklin County were combined, as were Charleston and Georgetown County. Although the conceptual framework for measurement and for analyses was essentially the same for Dayton as for subsequent sites, the Dayton data are analyzed and presented separately in Appendix A of this report.

Conceptualization and measurement of the health status of adults (aged 14 and older) enrolled in the experiment are discussed in the eight-volume Rand report R-1987-HEW. Two volumes in this series (R-1987/2 and 3) present data on the physical and mental health status of adults upon enrollment in the experiment at only the first site (Dayton, Ohio) and revisions made in measures of health status for repeated use in Dayton and other study sites. Subsequent reports will present results of revised measures of physical, mental, and social health status and general health perceptions for adults currently in use in the Health Insurance Study. Measurement of physiologic health is discussed by Brook, Goldberg, Lohr, et al. in Rand's forthcoming R-2262-HEW series, which has the overall title *Conceptualization and Measurement of Physiologic Health for Adults in the Health Insurance Study.*

Every effort was made to write the child health report so that it could be read without reference to the volumes of the R-1987-HEW series regarding adults. Volume I of that series (R-1987/1-HEW) describes the HIS background, design, data collection methods, model of health adopted for use in the study, measurement strategy, and criteria for selection of measures, as well as other material pertinent to the conceptualization and measurement of child health. So that the present report would be self-contained, several sections of that volume are incorporated here with only slight modification in the first six sections of Chapter 1. The interested reader is urged to consult other portions of R-1987/1-HEW that describe the methods used in the Study to construct health status measures and study their reliability and validity. In addition, the authors of this report were able to use the conceptual and organizational frameworks developed for reviews of the physical and mental health literature for adults that are reported in R-1987/2 and 3, respectively. The HIS general analysis plan and construct validation approach for children's data, which are described in this report, are based on a similar approach and techniques used for adults in Volumes I and VI of the R-1987 series.

Additional Rand reports and journal articles discuss other design and measurement issues related to the Study. A preliminary report of issues in health status assessment appeared in Arnold I. Kisch and Paul R. Torrens, "Health Status Assessment in the Health Insurance Study," *Inquiry*, Vol. 11, 1974, pp. 40-52.

The experimental design for estimating the effects of financing on demand for care is described in Joseph P. Newhouse, "A Design for a Health Insurance Experiment," *Inquiry*, Vol. 11, March 1974, pp. 5-27; and in J. P. Newhouse, *The Health Insurance Study: A Summary*, R-965/1-OEO, March 1974. Features of the design that enable estimation of the effects on utilization behavior attributable solely to participation in the experiment are discussed in Joseph P. Newhouse, Carl N. Morris, Kent H. Marquis, et al., "Measurement Issues in the Second Generation of Social Experiments: The Health Insurance Study," *Proceedings*, Social Statistical Section, American Statistical Association, 1976.

The logic and techniques used to determine optimum sample sizes for the Health Insurance Study and to assign individual families to experimental plans are described in Carl N. Morris, "A Finite Selection Model for Experimental Design of the Health Insurance Study," *Journal of Econometrics*, 11:43-61, 1979.

The first in a projected series of reports dealing with measurement of consumption of medical services in the Health Insurance Study is *The Methodology Used To Measure Health Care Consumption During the First Year of the Health Insurance Experiment*, by Kent H. Marquis, R-2126-HEW, August 1977. The application of reliability theory to evaluation of the quality of survey data such as those in the HIS is discussed in *Survey Measurement Design and Evaluation Using Reliability Theory*, by M. Susan Marquis and Kent H. Marquis, R-2088-HEW, June 1977.

Other methodological issues related to techniques for obtaining precise, unbiased estimates of medical care expenditures are examined in *The Measurement of Expenditures for Outpatient, Physician, and Dental Services: Methodological Findings from the Health Insurance Study*, by Kent H. Marquis, M. Susan Marquis, and Joseph P. Newhouse, R-1883-HEW, April 1976.

An overview of Health Insurance Study publications is found in a Rand paper by the same title written by Joseph P. Newhouse and Rae W. Archibald, P-6221, December 1978.

SUMMARY

In the Health Insurance Study (HIS), ratings of physical, mental, and social health and general health perceptions for children aged 0-13 are obtained annually from parents (proxies) by questionnaire to test hypotheses regarding the effects of differences in health care financing arrangements (i.e., differing coinsurance and deductible rates, and fee-for-service versus prepaid group practice) on health status. This volume discusses the conceptualization and measurement of health of children in general populations based on HIS enrollment questionnaire data; other HIS health status measures for children (e.g., enrollment physical examinations, health diaries, etc.) will be reported elsewhere. This volume includes: (1) A review of the literature to identify conceptual and methodological issues that needed to be addressed during development of HIS measures of physical, mental, and social health and general health perceptions, and to provide a framework for better understanding the strengths and shortcomings of HIS health status measures for children; (2) a description of the conceptualization and measurement of children's health status adopted in the HIS and of the results of administering these measures at enrollment in all six sites; (3) a discussion of the findings as they relate to previous literature, and suggestions regarding work that is needed to clarify their meaning and how they could be used in other studies.

Literature Review

The literature review focused on the measurement of each of the health dimensions selected for the HIS (i.e., physical, mental, and social health) and on general health perceptions. It was confined to studies conducted by investigators who developed survey measures of children's health status that were completed by a parent (rather than physicians, teachers, or others), were applicable to general (rather than clinical or chronically ill) populations, and for which empirical data regarding prevalence, reliability, or validity were available. The review of children's health status measures concentrated on the following issues: (1) similarities and differences in content of items designed to measure specific health constructs (e.g., functional limitations, anxiety), (2) whether investigators developed scaling strategies for their measures and whether assumptions underlying scoring methods were well-founded, (3) whether measures had sufficient variability to be useful as outcome indicators of health status in general populations of children, (4) whether measures met minimum standards of reliability, and (5) whether measures were valid indicators of the specific health status constructs they were intended to measure.

CONTENT

Content analyses indicated that physical health and general health perceptions were the only dimensions of children's health status about which there was general consensus regarding content of measures. Physical health measures contained similar items to define each of five major categories of functioning (i.e., self-care activities, mobility, physical activities, role activities, and leisure activities), whereas measures of general health perceptions used single-item ratings of the child's general health in terms of excellent, good, fair, or poor. No clear consensus was evidenced on either conceptual or operational definitions of mental health for children. Mental health measures for children focused primarily on overt, tangible behaviors that mix behavioral, psychological, and physical aspects of health status. There were few instruments intended to measure children's mental health that dealt exclusively with mental (as opposed to physical and social) health content. Social health was rarely distinguished as a separate health component or measured independently of mental health or behavior problems. The measures identified in the literature review for children assessed social health constructs as generally defined for adults (i.e., measures pertaining to interpersonal interactions and social participation).

SCALING

Only one investigator who developed scale or index measures of health status for children reported tests of the extent to which items in each scale measured the same construct and whether assumptions underlying scoring methods were appropriate. The appropriateness of combining items within specific health dimensions and of aggregating items covering several constructs remains to be confirmed by more extensive studies of the theoretical and empirical assumptions underlying scaling schemes.

VARIABILITY

Estimates of the central tendency and variability that can be expected in health status measures in general populations of children varied considerably, depending on the item content, age ranges of children studied, and scoring algorithms used to define health status measures. In general, scores were skewed toward the positive end of the distribution on all measures, suggesting that most of the children in general populations are reported to be in good health. None of the investigators directly addressed the issue of precision of measurement; thus, it is not clear under what circumstances published measures of children's health status have sufficient power to test hypotheses regarding the effects of differing health insurance arrangements.

RELIABILITY

Few investigators appeared to be concerned about the issue of the reliability of their health status measures. When reported, however, reliability estimates did appear to be adequate for purposes of group comparisons. Much more empirical work needs to be done on the reliabilty of specific health status measures before they can be used with any confidence.

VALIDITY

Published information about the validity of children's health status measures was limited chiefly to construct validity issues. Measures of functional status for children have not been well-validated, but there is some evidence of a relationship between measures of functional status and other physical health constructs. The construct validity of mental health measures, although more extensively studied than that of physical health, has been limited to whether the measures assess mental health. Evidence about what specific aspects of mental health are measured was sparse. Clarification of the operational definitions of mental health constructs and specification of their theoretical interrelationships would aid in evaluating the validity of children's mental health measures. Construct validity evidence pertaining to social health and general health perceptions was also infrequent, but tended to support the validity of items as measures of social and general health. Again, more validity studies are needed before these measures can be used confidently in general populations.

His Health Status Measures

In the HIS, four batteries of questions measured children's physical, mental, and social health and general health perceptions on the Medical History Qustionnaire administered at enrollment in five of the six sites. An abbreviated child health battery was administered in the original site (Dayton, Ohio) and was analyzed separately because it differed substantially from those fielded in the other sites. Questionnaire items were adapted from those used for persons 14 and older in the HIS.

Content and Scaling

Four functional status measures were constructed for children 0-4 years old: two single-item scores pertaining to physical activity limitations and self-care activity limitations and two dichotomous scores pertaining to role activity limitations and total functional limitations (one or more limitations of any kind). Similarly, four functional status measures were constructed for children 5-13 years old: three dichotomous scores (i.e., role-activity limitations, self-care/mobility limitations and total functional limitations) and one Physical Activity Scale based on scalogram analyses. Scores on each measure were computed for children with chronic limitations (limited for more than 3 months) and for children with limitations of any duration.

Three summated rating scales were constructed from the mental health battery representing the three dimensions of mental health for children aged 5-13: Anxiety, Depression, and Positive Well-Being. In addition, a combined Mental Health Index (the sum of the three specific constructs) based on summated ratings was constructed. A single Social Health summated ratings scale was constructed for children aged 5-13 from the three social health items. Three summated ratings scales were constructed from the general health ratings items representing three dimensions of general health perceptions for children in both age groups: Prior Health, Current Health, and Resistance/Susceptibility to Illness. In addition, a seven-item summated ratings scale, the General Health Ratings Index (a summation of the three dimensions) was constructed. Finally, one Satisfaction with Development Scale, based on summated ratings of four items, was constructed for children 0-4 years old. This scale represented aspects of the child's development for which parents might express satisfaction or concern.

DESCRIPTIVE STATISTICS

Distributions of item scores for HIS children's health status measures (except most of those representing physical health) indicated item variability sufficient to test hypothesized item groupings. HIS measures for children aged 0-13 tended to yield skewed score distributions; consistent with the literature, they suggested that most HIS children have favorable health status across all dimensions of health.

RELIABILITY

Reliability was estimated for HIS measures of mental and social health, general health ratings, and satisfaction with development using internal-consistency coefficients. For data combined across the five sites, reliability estimates indicated sufficient true score variance for their planned use in the HIS, i.e., to make group comparisons. In the individual-site analyses, reliability coefficients tended to be lower for respondents in South Carolina, where the sample was composed of a large proportion of disadvantaged persons (with respect to education and income). Reliability estimates for the Physical Activity Scales for older children were based on coefficients of reproducibility, and they too were satisfactory for HIS purposes.

VALIDITY

Content validity was judged adequate for most of the HIS children's health status scales and measures. Among physical health measures, all categories of activities limitations were represented in the HIS items, although leisure activities were not fully differentiated from role activities. The enrollment HIS mental health battery for older children, along with the fifteen-item battery relating to behavior and conduct problems (fielded after the fall of 1978), represent the major mental health dimensions found in the children's literature. Together they should provide a comprehensive mental health battery for use in general populations of children such as those involved in the HIS. The social health measure focuses on interpersonal relations, which is one of the two main content areas of importance. Although the second content area (social activities and participation) was not assessed at enrollment, some social participation information will be obtained from socially oriented items that are included in the fifteen-item battery relating to behavior problems. Finally, the HIS general health ratings measures are more comprehensive than the single-item ratings usually reported in health surveys for children.

Construct validity for HIS children's measures was estimated from associations among measures of the same health components (i.e., within mental health and within general health perceptions), associations among measures of physical, mental, and social health and general health perceptions, and associations among health status measures and other health-related variables (e.g., number of chronic or serious illnesses reported). Generally, such studies provide good support for the HIS multicomponent model of child health and for the construct validity of HIS measures. The patterns of associations were as hypothesized; several associations were substantial; and results were consistent with the objective that each scale reflect primarily one health component (e.g., mental health, social health) or multiple components (e.g., general health perceptions). There were, however, exceptions to the overall pattern of successful construct validity findings. For example, it is not clear whether HIS social health items adequately represent the social aspect of health; they may be assessing a positive aspect of mental health. Further analyses, which include social participation questions, are needed before the nature of the relationship between social and mental health for children can be clarified.

FURTHER ISSUES AND STUDIES

Several issues pertaining to the validity of children's health status measures for general populations remain to be studied. These include the use of children (e.g., 8 years of age and older) as primary respondents regarding their own health, the evaluation of effects of response biases (e.g., social desirability and acquiescent response sets), and questionnaire and response category wording on measured health status. In addition, several cross-sectional and longitudinal analyses will be performed to increase the understanding of scale scores in terms of (a) validity in relation to other information about child health status developed in the HIS (e.g., enrollment and exit physical examinations, biweekly health diary data), (b) prediction of health and illness behavior (e.g., consumption of medical care services), and (c) changes in child health over time.

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Chapter 1

INTRODUCTION

This volume discusses the conceptualization and measurement of health for general populations of children (aged 0-13 years) in developed countries. It is based on HIS questionnaire data collected from parents (proxies) at enrollment. It does not include a discussion of physiologic health (the status and functioning of specific organ systems) or other HIS health status measures for children. Chapter 1 describes the HIS background, study design, instruments used to collect data on health status, approach to conceptualization and development of measures of health status, and analytic methods used to study the adequacy of HIS health status measures. Readers who might wish details about the conceptualization and measurement of children's physiologic health and findings from the enrollment physical examination are referred to Brook, Goldberg, Harris, et al. (forthcoming); other health status measures for children will be reported subsequently.

Background[1]

The HIS is a social experiment in which representative samples of persons in different communities are assigned, by means of a nonbiased selection process, to several different health insurance plans (including a prepaid group practice). The experiment is designed to determine how varying the cost of health services to the patient and providing services in either the fee-for-service system or a prepaid group practice will affect the use of services, quality of care, patient satisfaction, and health status. The products of the research should prove useful to decisionmakers and the public in setting future health policies, particularly those relating to national health insurance.

To accomplish study objectives, a key step in the research was to develop reliable and valid health status measures that could be used as outcome measures to detect small but important changes in the health status of enrollees sampled from general populations. This report summarizes the progress that has been made in measuring child health status in the HIS.[2] The information presented here may prove helpful to those who are interested in knowing how health status is being measured in a social experiment such as the HIS, and to those who are involved in selecting child health status measures for use in other policy studies on the medical care system.

Selection and development of HIS health status measures for adults and children began in 1972. One health status battery for children, designed to measure physical health, was administered on the Baseline Interview in the summer of 1974, approximately 4 months prior to enrolling the first HIS sample in Dayton, Ohio. The first health questionnaire—the enrollment Medical History Questionnaire (MHQ)—was fielded in Dayton between November 1974 and February 1975. That questionnaire contained batteries of items specifically designed to measure physical and social health constructs for children. Between the fall of 1975 and the winter of 1977, enrollment MHQs containing expanded and revised batteries of items designed to assess physical, mental, and social health, and general health ratings for children were fielded in five additional sites across the country: Seattle, Washington, Fitchburg and Franklin County, Massachusetts, and Charleston and Georgetown County, South Carolina.

Health Insurance Study Design

To accomplish the objectives of the HIS, a sample of about 8000 people in 2750 families has been enrolled at those six sites. The sites were chosen (a) to represent the four Census regions of the country and an urban-rural mix, and (b) so that the amount of stress on the ambulatory medical care system would vary (at some sites, there are long delays for new and return appointments; at others, there is little delay).

Families are enrolled in one of the HIS plans for either 3 or 5 years (approximately 70 percent and 30 percent, respectively). Low-income families are oversampled. Eligibility for participation in the HIS is quite broad; the only ineligible persons are heads of household 61 years of age and older at the time of enrollment, members of the military, people confined to various institutions, and people eligible for Medicare (the Medicaid population is eligible). From each site, a clustered random sample of roughly 6000 families is chosen. These families are given a screening interview to determine eligibility. Using this information, a subset of 2000 families is chosen to receive a lengthy baseline interview. These families are selected in accordance with the Finite Selection Model developed by Morris (1979). The baseline interview verifies the information from the screening interview and asks questions about prior utilization and insurance. From the 2000 families given baseline interviews in each site, approximately 500 are chosen for enrollment and 300 are assigned to the control group. When families enroll, they assign their own health insurance benefits (if they were previously enrolled in a health insurance plan) to the HIS for the duration of their enrollment. If participation under these conditions could make a family worse off financially, the family is paid an amount of money sufficient to ensure that it will not lose by participating. Policies assigned to the HIS are maintained in force, and the HIS returns them to the families at the end of their participation in the experiment.

The families are assigned to one of 16 different insurance plans. Each family is assigned to its plan by a complex statistical model that helps to ensure that the families in each plan are as similar as possible and that assignments are nonbiased (Morris, 1979). The 16 experimental plans include

1. One plan in which care is free to the family.
2. Three plans with 25 percent coinsurance (i.e., the family pays 25 percent of its medical bills).
3. Three plans with 50 percent coinsurance (two of these only in Dayton).
4. Three plans with 50 percent coinsurance for dental and outpatient mental health services and 25 percent for all others (all sites except Dayton).
5. Three plans with 95 percent coinsurance (100 percent in Dayton during the first year of the experiment).
6. One plan with 95 percent coinsurance up to a maximum expenditure of $150 per individual (or $450 per family) per year and no coinsurance above that. In this plan only, the coinsurance applies solely to outpatient expenditures; inpatient expenditures are not subject to coinsurance.

7. One plan that assigns some of the Seattle participants to a prepaid group practice (Group Health Cooperative of Puget Sound) in that site.
8. One plan (a control group) that is a sample of people already enrolled in the Seattle prepaid group practice (to study whether those who have self-selected a prepaid group practice are systematically different.

All plans except 1, 6, 7, and 8 have an income-related ceiling on annual out-of-pocket expenditures paid by the family i.e., 5, 10, or 15 percent of annual family income. The maximum out-of-pocket expenditure per year per family is $1000 for the 50 and 95 percent coinsurance plans and $750 for the 25 percent plans (the latter only in Massachusetts and South Carolina). All plans have an identical benefits package that is extremely comprehensive, covering both ambulatory and hospital care, preventive services, all dental services except orthodontia, prescription drugs and appliances, certain over-the-counter drugs, psychiatric and psychological services, and virtually all other personal medical care services, including care delivered by chiropractors and Christian Science healers.

During the study, data are collected on demographic and socioeconomic variables, use of medical, dental, and mental health services, types of providers seen for care, health status, patient satisfaction, and a variety of other attitudinal variables (e.g., acceptance-rejection of the sick role) that may be useful in understanding differences in medical care consumption. Demographic and socioeconomic data are collected by interview prior to actual enrollment in the HIS and at periodic intervals thereafter. Data on use of services comes from claims submitted (chiefly by the provider) for reimbursement of services rendered and from health reports filed by each family (which also provide information on health status). Sources of health data are described more fully below.

Data Collection Methods

The HIS has several sources of data on the health status of individual enrollees, including the following:

- *Baseline Interview*—an interviewer-administered questionnaire given primarily to determine if the family is eligible for enrollment in the HIS. The Baseline was completed in the respondent's home approximately 4 months prior to possible enrollment in the experiment. Respondents were the heads of households; one head of the family could answer for the other if the latter was unavailable. Each family head received $5.00 for completing the Baseline Interview.
- *Enrollment Medical History Questionnaire (MHQ)*—a self-administered questionnaire specific to three different age groups (14 and older, 5 to 13, and 0 to 4) and completed in the respondent's home at enrollment. Adults complete the MHQ for children under 14. Because of its length, the MHQ was divided into two parts: in Dayton, Form A was completed by (or for) all individuals at enrollment and Form B by a random sample of enrollees selected to receive a multiphasic screening examination. In all other sites, both forms are completed by (or for) all enrollees at the time of enrollment.
- *Health Reports*—a biweekly questionnaire, completed by a head of household (generally the female head), that covers, on a person-by-person, day-by-day basis, the occurrence of restricted-activity days and bed dis-

ability days, and the use of medical and dental services. The family receives $4.00 for completing the Health Report.

- *Health Questionnaire*—a self-administered questionnaire completed by the individual enrollee (or a parent as proxy respondent) annually, close to the anniversary date of enrollment in the HIS. Batteries of items included in the Health Questionnaire are identical to those in the MHQ. Respondents receive $5.00 per family head for completing the Health Questionnaire.
- *Exit Medical History Questionnaire*--a self-administered questionnaire similar in content to the MHQ used at enrollment. Adults complete the questionnaire for children under 14. All persons complete Forms A and B, and are compensated in conjunction with completion of the exit screening examination.
- *Multiphasic Screening Examination*—a medical screening examination given to a randomly selected sample of families on enrollment and to all families on exit from the study.

Structured response choices (rather than open-ended questions) are used for all health status items in the above questionnaires. All questionnaires are checked for missing items. In administering the Baseline Interview, the trained interviewer probes for responses instead of just accepting missing data. For the self-administered MHQ, telephone calls are made to respondents if responses are missing for more than six items (out of many hundreds), and the missing information is obtained over the telephone. If the respondent has a problem with vision or in understanding the questions, the usually self-administered questionnaires (e.g., the MHQ) are interviewer-administered and the difference in administration is noted in the data bank. Data are processed by using standardized coding procedures and are then "cleaned" by a computer program that checks for possible coding errors and assigns a data status indicator describing the quality of data for each item in the questionnaire.

Conceptual Framework for Measuring Health Status

The designers of the HIS view health as a multidimensional concept. Following the definition of health proposed by the World Health Organization (WHO, 1978)—that "health is a state of complete physical, mental and social-well being and not merely the absence of disease or infirmity"—three of the dimensions identified for measurement were physical, mental, and social health. One aspect of physical health—that of physiologic health (the status and functioning of specific organ systems)—was singled out as a fourth dimension; the way in which it has been operationally defined and measured for children in the HIS is discussed by Brook, Goldberg, Harris, et al. (forthcoming). An integrative concept not specified by the WHO—general health perceptions—was also included among HIS health status measures because it was believed to reflect all four health status dimensions and to contain unique subjective information about health.

Although the WHO specified health status dimensions of importance, it did not offer operational definitions. Adoption of specific operational definitions for each dimension, and selection of constructs within each dimension for measurement, had to take the particular research context of the HIS into account.

HIS Measurement Strategy

A number of features of both the HIS study design and the planned use of health status measures had implications for the health status measurement strategy. The primary reason for developing health status measures in the HIS was to provide data for use in determining how changes in the quantity and quality of personal medical care services provided by the various health insurance plans would affect the health status of a general population. Because of the interest in analyzing the effects of differences in health care financing on specific dimensions of health, the HIS focused on measuring each dimension as separately as possible and tried to minimize any overlap in the operational definitions of each dimension and construct. The operational definitions of physical, mental, and social health status constructs that were deemed appropriate for HIS use were therefore not as comprehensive as others found in the literature; also, they may not be useful for all research purposes, nor as the basis for clinical screening instruments. In particular, medical history items were not developed to serve as a screening device and were not intended to provide information regarding specific diagnoses or prognosis of particular conditions.

Whether items and measures ultimately prove useful as screening instruments is an empirical question. Regardless of initial purpose, measures that assess the outcome of an experimental program in a general population of children (or adults) who are relatively healthy are likely to be quite different from those used to assess a special population screening instrument or a specific treatment/drug regimen in a particular diagnostic/disease category. For example, in the former case, great emphasis is placed on the measures having sufficient statistical power to detect small but meaningful differences in health status as a function of experimental conditions (e.g., differing health care financing arrangements in the HIS). In the latter case, the instrument's ability to discriminate between clinical and nonclinical populations or between those who received a specific treatment or drug from those who did not is of primary importance. The main consideration in the HIS has been to select or develop measures capable of serving as meaningful outcome indicators.

However, batteries of items used to measure aspects of physiologic health for children do provide diagnostic information regarding a select group of diseases (Brook, Goldberg, Harris, et al., forthcoming). In addition, information about individual health habits is collected during the HIS and can be used for prognostic purposes (Stewart, Brook, and Kane, 1979). Data on health status are collected several times during the HIS, and the ability to compare scores on health status measures over time decreases the need to build prognostic information into the health status measures.

In selecting constructs within each dimension for measurement, emphasis was placed on those that would be relatively common in general populations of children, and that might show change as a function of differences in the quantity and quality of medical services consumed during the 3- to 5-year duration of the HIS. Although some health and behavior problems are common in general populations of children, analyses of the effects of differences in health care financing on health status required that the constructs selected for measurement reflect changes in health that might result from changes in the use of services covered by health insurance plans differing in the amount of out-of-pocket expenditures required.

The HIS was not limited to the construction of a health status measure that would yield one number representing an individual's overall health status. For each health status dimension included in the HIS (i.e., physical, mental, social, and general health perceptions), a battery of many items was used. Within each battery, items were included to measure more than one construct (e.g., within the battery used to measure mental health, items were included to measure anxiety, depression, and positive well-being). If analyses indicated that the information provided by the multiple measures of health status could be summarized in a smaller number of scores without significant loss of information, such a composite or aggregate measure could be constructed subsequently.

Constraints on data collection (e.g., the sensitive nature of questions and cost) indicated that self-administered questionnaires were preferred. This strategy was adopted when it became clear that reliance on self-administered questionnaires with appropriate assistance and followup when needed would yield data of acceptably high quality, even among the least educated groups enrolled in the HIS. Stringent edit specifications that were used when the questionnaires were still in the field identified gross problems in data quality while there was still an opportunity to correct them by recontacting the respondent.

Finally, the HIS required that, wherever possible, measures be selected from those previously fielded in studies of general populations (or that they be adapted from such measures). This requirement will permit HIS health status measures to be compared with those used in previous national probability sample surveys, such as the National Health Interview Survey.

Criteria for Selecting HIS Measures

To ensure that HIS measures of child health status would be most useful for their intended purpose—providing data for analyzing the effects of different health insurance plans on health status—the measures had to meet the following criteria:

- The measures should be in agreement with contemporary conceptualizations of the dimensions of child health and of constructs within those dimensions.
- The operational definitions of each dimension and construct, as reflected in the items included in HIS questionnaire batteries, should reflect measurement state of the art as defined in the literature.
- The items used to measure each construct should be combined in such a way that the number of variables (or scores) used to define health status on that construct is reduced as much as possible without substantial loss of information.
- Score distributions for each measure should have sufficient variability so that they are useful in detecting actual differences in the health status of children in a general population for whom repeated measures are available (i.e., they should permit hypotheses about differences in health status to be tested as a function of differences in health insurance plans).
- The measures should be substantially free of error (i.e., they should be as reliable as necessary) to permit average levels of health status within groups to be estimated confidently and comparisons to be made among plans or between disadvantaged and nondisadvantaged groups.
- Each measure should provide information about the particular health

> dimension or construct it was intended to measure (i.e., it should be valid) without duplicating information obtained from other HIS health status measures.

In evaluating the extent to which HIS child health status measures met these criteria, emphasis was placed on the "worst case of measurement"; i.e., these criteria had to be met in subgroups of the HIS sample for whom data quality could be expected to be poorest, such as enrollees who were disadvantaged in terms of education and income.

The following paragraphs describe the constructs chosen for measurement within each of the four major health status dimensions after consideration of the preceding measurement criteria.

PHYSICAL HEALTH

In the HIS, physical health has been operationally defined in terms of functional status. Functional status refers to performance or capacity to perform a variety of activities that are normal for an individual in good health. A review of the literature (see Chapter 2, Sections B and C) on measures of physical health in terms of functional status identified five categories of activities for which performance or capacity (ability or inability to function) has been assumed to reflect primarily a child's physical, as distinct from mental or social, health. These include self-care activities (e.g., feeding, bathing); mobility (e.g., confinement indoors); physical activities (e.g., walking, running); role activities (activities typical for an individual of a specified age and societal level, such as school); and leisure activities (e.g., hobbies, sports). Measures of performance and/or capacity in all five categories of activities have been included in HIS batteries of items hypothesized to measure physical health for children in all sites starting with Dayton.

MENTAL HEALTH

A review of the literature on measurement of mental health for adults (Ware, Johnston, Davies-Avery, et al., 1979) identified four constructs that met the criteria previously outlined: anxiety, depression, positive well-being, and self-control. Operational definitions of these mental health constructs in the HIS focused chiefly on psychological states (i.e., affective/mood and feeling states), rather than on a combination of psychological and somatic states (i.e., physical manifestations of anxiety, depression, positive well-being, or self-control); both unfavorable and favorable aspects of these states were studied. In contrast, the literature review of children's mental health measurement (see Chapter 2, Sections E and F) identified primarily problem constructs relating to behavior and conduct, such as hyperactivity, aggression, and antisocial behavior rather than anxiety and depression constructs. Operational definitions of children's mental health problems found in the literature review focused more on tangible, overt behaviors and actions (e.g., fighting, stealing) than on psychological states (e.g., depression); almost no measures of favorable aspects of a child's behavior and psychological state (e.g., happiness, enjoyment) were found in the literature reviewed.

For several reasons, including concern about whether the medical care system could affect children's behavior problems (e.g., antisocial or delinquent actions) and a desire to concentrate mainly on psychological aspects of mental health, rather than mix psychological and somatic aspects, it was originally decided to focus on measuring psychological states for children in the HIS. Thus, a purely psychological mental health battery was included in the enrollment MHQ for all sites except Dayton (where no mental health measures for children were fielded at enrollment); this battery was added to all subsequent Dayton health questionnaires. Because of recent advances in the treatment of children's behavior problems, and no indication of trends toward more psychologically oriented measurement, thinking has changed with respect to complete reliance on psychological item content. As a result, a battery of mental health and behavior problems has been added to annual health questionnaires fielded after the summer of 1978. Item content focuses on four behavior areas: aggressive, delinquent, hyperkinetic, and socially withdrawn.

SOCIAL HEALTH

Social health has been viewed in the literature (Donald, Ware, Brook, et al., 1978) both as a dimension of health status (i.e., as a dependent variable) and in terms of social support systems that modify the effect of the environment and stressful life events on physical and mental health (i.e., as an intervening variable). The literature on conceptualization of social health for adults indicated less consensus on specific activity categories that reflect primarily an individual's social health than did the literature on physical health. There appeared to be some consensus, however, that social health could be operationally defined in terms of interpersonal interactions (e.g., visits with friends) and activities indicative of social participation (e.g., membership in clubs). There was no such general consensus with respect to social health for children. In fact, no specific discussions of social health were found in the literature reviewed (see Chapter 2, Sections H and I). In the absence of agreed upon definitions, social health for children was operationalized in terms of the quality of interpersonal interactions with significant persons in the child's environment. A short battery of items hypothesized to reflect primarily social health was given to the Dayton sample at enrollment. Subsequently, some items were revised, others were deleted, and a second, smaller battery was included at enrollment in each of the other sites and in later administrations in Dayton.

GENERAL HEALTH PERCEPTIONS

Measures of general health perceptions differ from other measures of health status in that they do not focus on a specific dimension of health status (i.e., physical, physiologic, mental, or social). Instead, such measures ask parents (proxies) for an assessment or rating of their children's health in general. In theory, this difference in measurement makes it possible to assess both the objective information people have about their children's health and their evaluation of that information. In the HIS, general health perceptions for children have been defined with respect to time (perceptions of prior and current health) and with respect to two other constructs indicative of general health perceptions, the child's resistance or susceptibility to illness, and his or her pain and distress due to health problems. Both favorable and unfavorable definitions of health are included in the operational definitions of these general health perception constructs. Also, a general evaluation of the child's health (in terms of excellent, good, fair, or poor) was included. A comprehensive battery of general health perception items was not included in the Dayton enrollment MHQ, but a separate battery of items designed specifically to assess the above aspects of general health perceptions was administered at enrollment on all HIS MHQs fielded following the Dayton enrollment MHQ and subsequently in Dayton.

Organization of the Report

Chapter 2 includes a literature review that describes the ways other investigators have conceptualized and measured children's physical, mental, and social health, and general health ratings, and critically evaluates the measures in terms of their apparent usefulness as indicators of health status in general populations of children. The review deals with several issues:

- Similarity and dissimilarity in content of items designed to measure specific health constructs.
- Whether investigators developed scaling strategies for their measures and, if so, whether tests were made of the assumptions underlying the strategies.
- Whether measures have sufficient variability to be useful as indicators of health status in a general population.
- Whether measures meet minimum standards of reliability in all population subgroups of interest.
- Whether measures are valid indicators of the specific health status constructs they are intended to measure.

Chapter 3 describes the content of health status measures fielded for children in the HIS, summarizes demographic and socioeconomic characteristics for children and their families in HIS sites, and outlines the plan of analysis used to scale measures and study their reliability and validity. Chapter 4 presents the results of HIS scaling analysis for children, including descriptive statistics for scale scores, reliability and validity of the scales that were developed, and sociodemographic correlates of health status[3]. Finally, Chapter 5 discusses the findings of children's HIS measurement studies as compared with those reported in the literature, describes additions to the HIS mental health battery, and suggests further analyses and refinements in measurement of child health status in general populations of children.

FOOTNOTES

1. Much of the content of this and succeeding sections of Chapter 1 was originally presented in Volume I, Chapters 1-4, of the R-1987-HEW series, (see Ware, Brook, Davies-Avery, et al., forthcoming).

2. For documentation of the health status measures used for adults in the HIS, see Donald, Ware, Brook, et al., 1978; Stewart, Ware, Brook, et al., 1978; Ware, Johnston, Davies-Avery, et al., 1979.

3. Results from the Dayton site are analyzed and reported separately in Appendix A because a complete battery of physical, mental, social, and general health perceptions items was not fielded there and data are not strictly comparable to enrollment data collected at subsequent HIS sites.

Chapter 2

LITERATURE REVIEW

Background

Following adoption of the WHO multicomponent conceptualization of health as a framework for operationalizing and then selecting or developing appropriate outcome measures of children's health status for use in the HIS, the relevant literature was reviewed for each component—physical, mental, and social health and general health perceptions. These reviews were used to determine how other investigators have measured health status, to identify issues that needed to be addressed in selecting and constructing HIS measures, and to provide a backdrop for better understanding the strengths and shortcomings of HIS health status measures. They focused on developments in the state of the art of measuring each of these dimensions over the past 20 to 25 years. Literature pertaining to measurement of physiologic health and normal growth and development of children (aged 0-13) will be reviewed in Brook, Goldberg, Harris, et al. (forthcoming).

Articles were identified by reviewing HIS files that contain some 500 to 600 articles and are updated by periodic screening of some 25 journals that frequently publish articles on conceptualization and measurement of health status variables. Candidates for inclusion in the various reviews were restricted to studies conducted by investigators who developed survey measures of physical, mental, social, or general health. Instruments reported in these studies had to be completed by a parent (rather than a physician, teacher, mental health worker, or other health personnel) and had to be applicable to a general population, such as that enrolled in the HIS, or to have been standardized on general or nonclinic populations. In addition, empirical data regarding prevalence of physical, mental, or social health problems, reliability, or validity of the instruments had to be reported or readily available. Thus instruments and data from several child health projects currently in progress (e.g., Guttmacher, Garbowski, and Elinson, 1978, and Zill, forthcoming) were not included in these reviews. Work reported by investigators who developed or used multi-item and potential outcome measures were of special interest.

A. Introduction to Physical Health

PHYSICAL HEALTH IN TERMS OF FUNCTIONAL STATUS

Functional status refers to the performance of, or the capacity to perform, activities that are normal for children in good health. Measures of how well an individual functions can refer either to abilities and limitations in the performance of these activities, or to changes in usual daily activities. Several normal activities can be identified in which performance or the ability or inability to function (capacity) may chiefly reflect a child's physical health (e.g., inability to walk due to health). Distinctions between items worded in terms of capacity (e.g., could this child walk one block) or performance (e.g., did this child walk one block last week) were not made in the literature reviewed for children. Findings from measures of adult functional status suggest that the relationship between performance and capacity measures is very strong, with some differences in performance among those with unlimited capacity (see Stewart, Ware, Brook, et al., 1978). It is not known whether these differences reflect individual preferences or interests rather than diverse health states.

MEASURES OF ACTIVITIES INDICATING FUNCTIONAL STATUS

Measures of activities indicating functional status are included in this section if the child's physical health appears to be a major, if not the primary, factor in performance or capacity to perform. Measures of five types of activities are discussed:

1. *Self-care activities:* dressing, bathing, and going to the toilet.
2. *Mobility:* getting around indoors, outdoors, or in the community.
3. *Physical activities:* using stairs and hard exercise.
4. *Role activities:* activities typical for a child of a specific age (e.g., play or going to school).
5. *Leisure activities:* athletics, games, etc.

In general, measures focus on limitations in performance of activities either within one of these categories or across categories. They may also concentrate on changes in usual activities without specifying the abilities necessary to do these activities (e.g., measures of disability days).

These five categories all reflect physical health but differ somewhat in the extent and levels that are represented by activities in each category. Some of the activities are better indicators of physical health than others. For example, in an activity such as hard exercise, physical health is the major influence, but activities such as school performance also reflect substantial influence of nonhealth variables (e.g., cognitive abilities). Most investigators who have measured physical health in terms of functioning have established two categories of activities: those involving individual capacities and those involving role capacities. In general, individual capacities (e.g., moving about, bathing) reflect physical health to the greatest extent, and role capacities (e.g., school performance) to a lesser one.

Another distinction between the categories is the levels of physical health that each measures. For each of the above categories, many activities can be defined and ordered on a continuum ranging from those most essential or easy to perform to those less essential or more difficult to perform. For example, only a fairly narrow range of activities can be included in self-care and mobility. These represent very basic functions (e.g., dressing oneself, going outdoors) that most children can normally do unless they are seriously ill or disabled. The most positive health state that can be described by measures of self-care or mobility is absence of limitations in essential activities. The categories of physical, role, and leisure activities are broader in range. They may refer to walking a short distance or to strenuous athletic exercise. Such a range permits description of both limitations or absence of limitations in basic activities, as well as more positive states of physical health.

B. Approaches to Measurement of Physical Health

Information regarding studies conducted by four groups of investigators who developed physical health measures is summarized in Table 1, including the year(s) the study was conducted, its purpose, age range of the sample, location of the study, type of sample, and methods of data collection. It should be noted that several investigators who developed survey measures of functional status applicable to adults and children are not included in the review (e.g., Patrick, Bush, and Chen, 1973; Roghmann, 1975; Kohn and White, 1976), because they did not report empirical findings separately for children.

Several measures of functional status contain only items within a particular category (e.g., the National Health Interview Survey's Mobility Scale), whereas two studies combine items across categories to make an aggregate measure. Three investigators measured activities within one or more categories. Measures are reviewed in terms of content, level of measurement (nominal or ordinal) assumed in computing scores if items were aggregated, and the empirical methods used to define scales (e.g., to determine appropriateness of item groupings or ordering of items in terms of severity) if reported.

MEASURES OF SPECIFIC CATEGORIES

Self-Care Activities

The self-care activity category includes activities pertaining to feeding, dressing, bathing, going to the toilet, and continence. Only one study included self-care item content. Table 2 is a summary of items included by Reynolds, Rushing, and Miles (1974). Self-care activities were conceptualized as a component of the Role and Other Activities Scales but were scored separately to compute their aggregate measure (the Function Status Index).

Mobility

The mobility category was conceptualized in terms of both range of travel (e.g., confinement to bed or house or ability to get around freely) and dependency in getting around (e.g., independent, independent but has difficulty getting around, and dependent on others). Mobility measures developed for children by two investigators are summarized in Table 3. Four general levels of severity are represented: (1) mobile, not limited; (2) limited in mobility, independent; (3) limited in mobility, needs assistance; and (4) generally immobile. These levels of severity are similar to those identified for adults (see Stewart, Ware, Brook, et al., 1978). Neither the National Health Interview Survey (NCHS, 1971a) nor Reynolds, Rushing, and Miles (1974) reported testing the assumption of ordinality in their measures, but there was substantial conceptual agreement across the studies with respect to the content and ordering of levels in terms of severity.

Physical Activities

Measures of physical activities for children found in the literature are summarized in Table 4. The physical activity category includes such activities as walking,

Table 1

SUMMARY OF INFORMATION REGARDING STUDIES OF FUNCTIONAL LIMITATIONS MEASURES FOR CHILDREN 18 AND UNDER

Investigator/ Study	Year(s) Study Conducted	Purpose of Study/ Use of Measures	Age Range of Sample	Location of Study	Type of Sample	Methods of Data Collection	Reference
National Health Interview Survey	1957-present	Ongoing nationwide survey to obtain information about the health and other characteristics of persons in the U.S.	17 and under or under 15	United States	Probability sample of general, noninstitutionalized population	Interviewer-administered questionnaire to parent or parent substitute	NCHS (1971, 1977a, 1977b)
National Health Examination Survey	1963-1965 and 1966-1970	Ongoing nationwide survey to obtain actual diagnostic data on the prevalence of medically defined illnesses	6-17	United States	Probability sample of general, noninstitutionalized population	Clinical examination of children and self-administered medical history questionnaire by parent or parent substitute	NCHS (1973)
Schach and Starfield	1968-1969	Develop and test new measures of acute childhood disability using WHO's American data base.	0-14	Baltimore Standard Metropolitan Statistical Area (SMSA)	Random sample of children in the Baltimore SMSA.	Interviewer-administered questionnaire to parent or parent substitute	Schach and Starfield (1973)
Reynolds, Rushing, and Miles	1972-1973	Evaluate effectiveness of health care delivery systems	2-16	Alabama	Representative sample of rural economically depressed area	Interviewer-administered questionnaire to parent or parent substitute	Reynolds, Rushing, and Miles (1974)

Table 2

SUMMARY OF SELF-CARE ACTIVITIES MEASURES

	Reynolds, Rushing, and Miles (1974)
Level of measurement	Dichotomous
Scaling method	None reported
Number of items	1
Item name	Component of *Role and Other Activity Scale*[a]
Response categories	*Required assistance with self-care activities:* Needed help from others in looking after personal care, such as dressing, bathing, eating, and other activities. Not independent in feeding, continence, transferring, going to toilet, dressing and bathing.

[a] This was conceptualized as a component of the Role and Other Activity Scale but was scored separately to compute the Function Status Index.

climbing stairs, use of special aids to walk, moving one's body in a variety of ways, and hard exercise or play.

Two types of physical activities have been included: (1) ambulation (climbing stairs, hard exercise) and (2) body movement (lifting, stooping, bending). Physical activities were conceptualized in terms of either ability to perform activities or extent of need for assistance in performance. The National Health Examination Survey (1973) focused on ability to perform specified activities, whereas Reynolds, Rushing, and Miles (1974) concentrated on ability, the extent of need for assistance, and aspects of mobility. In the latter case, need for assistance appeared to represent a more severe limitation than having difficulty with an activity. Both investigations emphasized ability to perform an activity rather than whether or how often a person actually performed it; no studies that based scores on reports of actual performance were identified.

There were few types of physical activities represented for children in contrast to the range reported for adults (see Stewart, Ware and Brook, 1978). Empirical tests of assumptions underlying the ordering of limitations in terms of severity were not identified in published reports. Such tests would be useful in confirming one questionable assumption—whether confinement to bed and moving independently in a wheelchair should be included in the physical activities category established by Reynolds, Rushing, and Miles (1974) (see Patrick, Bush, and Chen, 1973).

Role Activities

Role activities pertain to activities typical for children of a specified age. Major role activities are defined as those occupying a substantial part of a child's day, such as school for school-age children and play for younger children. Role activities

Table 3

SUMMARY OF MOBILITY MEASURES

	National Health Interview Survey (NCHS, 1971a)	Reynolds, Rushing, and Miles (1974)
Level of measurement	Nominal/ordinal[a]	Ordinal
Scaling method	None reported	None reported
Number of items	1	1
Item name/category	*Chronic Mobility Limitations*	*Mobility*
Mobile, not limited	*Is not limited in mobility:* Not limited in any of the ways described below.	*Traveled freely:* Able to go outside the home without help from another person; able to use buses, trains, or other public transportation without help from others.
Limited in mobility, but independent (has difficulty)	*Has trouble getting around freely:* Does not need the help of another person or a special aid but has trouble in getting around freely.	*Traveled with difficulty:* Not able to do the above.
Limited in mobility, needs assistance	*Needs help getting around:* Able to go outside but needs the help of another person or of a special aid, such as a cane or wheelchair, in getting around.	
Generally immobile	*Stays in the house:* Must stay in the house, but not in bed, all or most of the time. *Stays in bed:* Must stay in bed all or most of the time.	*In house:* Needed human assistance to go outside the home; had to stay in the house all or most of the time. *In hospital:* Hospital day--day in which person is confined to the hospital. *In special unit:* In special unit.

[a] Item was treated statistically as nominal but appears to be ordinal.

Table 4

SUMMARY OF PHYSICAL ACTIVITIES MEASURES

	National Health Examination Survey (1973)	Reynolds, Rushing, and Miles (1974)
Level of measurement	Nominal (dichotomous)	Ordinal
Scaling method	Not applicable	None reported
Number of items	2	1
(1) Item name	*Exercise Restrictions*	*Physical Activity*
Response categories	Kept from hard exercise or play (now).	*Walked freely:* Able to lift and carry weights, sit, stand, stoop, kneel, crouch, use stairs or inclines, walk, reach, handle, and write. Walks without any aid. *Walked with limitations:* Not limited in walking but limited in lifting, stooping, or using stairs; walked with difficulty; used mechanical appliance or special aid, such as a wheelchair, braces, crutches, artificial limbs, hearing aid, or guide dog. Can walk with a cane or crutches; can walk with mechanical aids; can walk only short distances; can walk without aids but takes longer. *Moved independently in wheelchair:* Moves independently in a wheelchair. *In bed or chair:* Must stay in bed all or most of the time. Can sit unaided in a wheelchair, but cannot propel self; does not sit without support. Bed-disability day: person stays in bed all or most of the day because of specific illness or injury.
(2) Item name	*Exercise Restrictions*	
Response categories	Kept from hard exercise or play (ever).	

appear to be defined in terms of inability to do major activities, limitations in types of major activities, and difficulty performing major activities.

Conceptualizations of role activity measures are summarized in Table 5. In general, conceptual schemes distinguished three levels of limitations: (1) no limitations, (2) some limitations, and (3) cannot perform major role activity at all. Although there were no empirical studies of the ordering identified, there was substantial consensus regarding the ordering of the three general levels of limitation in role (school, play) limitations.

Leisure Activities

Leisure activities include activities other than those defined in terms of major roles (e.g., participation in athletics, games, hobbies). The two investigations that measured this category used the same item, with Reynolds, Rushing, and Miles (1974) borrowing from the National Health Interview Survey's Chronic Limitations Scale (see Table 6) . Both also included it as a component of an aggregate measure (discussed below).

MEASURES THAT AGGREGATE CATEGORIES OF ACTIVITIES

Role and Leisure Activities

One study (NCHS, 1971a, 1977a, 1977b) combined categories of activities into a multi-item measure. Measures of role and leisure activities were combined to define the Chronic Activity Limitations Scale. Four levels were defined for school-age children: (1) inability to go to school, (2) limited to certain types of schools or in school attendance (e.g., needs special school or special teaching or cannot go to school full time or for long periods at a time), (3) not limited in going to school but limited in participation in athletics or other extracurricular activities, and (4) not limited in activities. Although leisure activities were presented as being less severe than limitations in role activities, neither this assumption nor the scalability of the items was tested.

Self-Care, Role, and Leisure Activities

Reynolds, Rushing, and Miles (1974) combined measures of self-care, role, and leisure activities into a single scale (see Table 7). School activities were included only as a major role activity for school-age children; children 2-5 years old were not specifically excluded, but their primary role activity was not identified; and younger children (0-2 years) were excluded from consideration. Reynolds et al. assumed that need for assistance in self-care activities was the most severe limitation and that limitations in role activities were more severe than limitations in leisure activities; these assumptions were not tested empirically.

Self-Care, Mobility, Physical, Role, and Leisure Activities

One investigation (Reynolds, Rushing, and Miles, 1974) led to our combining information from all five categories of activities for children over 2 years of age (i.e.,

Table 5

SUMMARY OF ROLE ACTIVITY MEASURES

	National Health Interview Survey (NCHS, 1971a;1977a;1977b)	National Health Interview Survey (NCHS, 1971a;1977a;1977b)	Schach and Starfield (1973)	Reynolds, Rushing, and Miles (1974)
Level of measurement	Nominal/ordinal[a]	Nominal/ordinal[a]	Nominal	Ordinal
Scaling method	None reported	None reported	Not applicable	None reported
Number of items	(Component of scale)	(Component of scale)	1	(Component of scale)
Application	CHILDREN UNDER 6	SCHOOL-AGE CHILDREN	CHILDREN AGES 0-14	SCHOOL-AGE CHILDREN
Item name	Role Component of *Chronic Activity Limitations*	Role Component of *Chronic Activity Limitations*	*Activity-Limiting Impairments or Chronic Disease*	Component of *Role and Other Activity Scale*
Response categories	*Not limited in activities.* *Limited in amount or kind of major activity performed* (e.g., limited in amount or kind of play). *Unable to carry on major activity* (e.g., inability to take part at all in ordinary play with other children).	*Not limited in activities.* *Limited in amount or kind of major activity performed* (e.g., limited to certain types of schools or in school attendance. For example, needs special schools or special teaching or cannot go to school full time or for long periods at a time). *Unable to carry on major activity* (e.g., inability to go to school).	Limited in ability to attend school or to do any of the things a child (his/her) age normally does.	*Performed major activity:* Not limited in activities. School age--not limited in school. *Performed major activity with limitation:* Limited in the amount or kind of major activity performed. School age--limited to certain types of schools or in school attendance, e.g., need special schools or special teaching, cannot go to school full time or for long periods at a time. *Did not perform major activity:* Unable to carry on major activity for the day.

[a] Item was treated statistically as nominal but appears to be ordinal.

Table 6

SUMMARY OF LEISURE (OR "OTHER") ACTIVITIES MEASURES

	National Health Interview Survey (NCHS, 1971a, 1977a)	Reynolds, Rushing, and Miles (1974)
Level of measurement	Nominal	Ordinal
Scaling method	None reported	None reported
Number of items	(Component of scale)	(Component of scale)
Application	SCHOOL-AGE CHILDREN	SCHOOL-AGE CHILDREN
Item name	Component of *Chronic Limitations Scale*	Component of *Role and Other Activity Scale*
Response categories	*Not limited in activities.*	
	Limited (e.g., limited in athletics or other extracurricular activities).	*Limited in other activities:* School-age--limited in participation in athletics or other extracurricular activities.

Table 7

AGGREGATE MEASURES OF SELF-CARE, ROLE, AND LEISURE (OR "OTHER") ACTIVITIES

Scale Level	Role and Other Activity Scale (Reynolds, Rushing, and Miles, 1974) Definition
Performed major and other activities	*Not limited in activities:* School-age--not limited in school.
Performed major activity but limited in other activities	*Not limited in major activity but otherwise limited:* School-age children--not limited in going to school but limited in participation in athletics or other extracurricular activities.
Performed major activity with limitations	*Limited in the amount or kind of major activity performed:* School-age children--limited to certain types of schools or in school attendance, e.g., need special schools or special teaching, cannot go to school full-time or for long periods at a time.
Did not perform major activity but performed self-care activities	*Unable to carry on major activity for the day:* School-age children--inability to go to school.

3-15). The Function Status Index indicated the number out of four categories of functioning—role and other (which included school and leisure activities), self-care, mobility, and physical—on which a proxy respondent reported any limitation for the child. Scores ranged from 0 (no limitations in any category) to 4 (one or more limitations in all four categories).

Summary

There appears to be agreement among investigators as to the types of items used to measure different categories of limitations for children. This agreement tends to reinforce the validity of individual items to the extent that they appear to assess the physical health constructs they were intended to measure. However, in the literature review, items identified for children tended to be less comprehensive than those identified for adults (see Stewart, Ware, Brook, et al., 1978). The measures for adults appear to reflect a wider variety of physical activities, such as the ability or inability to run, lift, pull, and push. It may be that some of these more strenuous activities were not included in early scales because they are less easily measured for children who are at lower levels of physical development.

Investigators who constructed aggregate measures of functional status tended to combine items across categories without having empirical evidence or, at times, a theory to support such schemes. A disadvantage to aggregation across categories of activities to achieve an overall measure is the potential loss of information about performance of specific activities. It would be difficult to interpret an aggregate score if many different patterns of functioning resulted in the same score. The literature review did not identify any studies that addressed the question of which categories are most appropriate to combine and how they should be combined. It appears that empirical studies are needed to aid in determining which categories should be aggregated, as well as to test assumptions underlying the specific ordering of activities categories.

MEASURES OF DISABILITY DAYS

In this section, we will focus on ways to measure changes in a child's usual activity in terms of the number of days on which changes occurred. These measures differ from those discussed above regarding functioning because the abilities necessary to do these activities are not always specified. Examples of such measures are questions about the number [illegible] child cuts down on activities because of illness, or the number of days that the child spends in bed. Changes in activities are measured primarily in terms of duration [illegible] measures can also be broken down in terms of the extent of changes involved [illegible] number of days that the child (1) feels less well than usual, (2) functions less well than usual, (3) restricts activity (cuts down on the amount of time of activity), (4) does not attend school or is not active, and (5) stays in bed.

An advantage of measures of disability days over previously discussed measures of physical functioning is that the former concisely identify changes in functional performance. They are most appropriate for measuring functional status on a day-to-day basis or for measuring short-term changes in activities. A disadvantage of these measures is that they do not identify a limitation unless it is a change.

For example, children who have permanently reduced their usual activities because of a chronic condition might not report any restricted-activity days during a 2-week period if a day is not unusually restricted. Thus, the absence of restricted-activity days does not necessarily imply normal health. Another threat to the validity of measures of disability days is that such measures may reflect the influence of nonhealth variables, as, for example, the willingness of the child to accept the sick role. One child with a cold may continue usual activities whereas another may accept the sick role and spend a day in bed.

Six investigators constructed measures of disability days. These measures are summarized in Table 8 according to the types and extent of changes involved.

The Canadian Sickness Survey (1960) measured disability days in terms of three types of changes in activity. The complaint period referred to times when children felt less well than usual. The disability and bed periods defined inability to perform usual activities at all. Changes in activity were measured for an entire year by means of a day-to-day record of sickness filled out by a proxy respondent for each child.

The Commission on Chronic Illness (1957) and Trussel and Elinson (1959) measured the complaint "feeling less well than usual" along with three types of activities loss: day of disability, day in bed, and day kept indoors. They also constructed a summary indicator that combined all three types of disability. Questions were asked with three recall periods: past 12 months, past 4 weeks, yesterday. Respondents also indicated if symptoms of specific chronic diseases had caused any of the three types of activity loss during the past 4 weeks or bed or disability days during the past year.

The National Health Interview Survey (NCHS, 1978) defined a disability day as a short-term reduction in activity resulting from acute or chronic conditions. The survey measured three types of disability days for children: (1) restricted activity, (2) bed disability, and, (3) school loss. It also defined two summary indicators: (1) a person-day, summarizing across various types of days for each person, and (2) a condition-day, summarizing all types of days of changes in activities for any one condition. All questions referred to the 2 weeks preceeding the interview.

The Isle of Wight study (Rutter, Tizard, and Whitmore, 1970) included two types of disability measures: (1) the number of days during the last year in which the children showed at least a moderate handicap—i.e., when they were substantially impaired in their ordinary daily activities—and (2) the number of half-days absent from school in the previous school year.

Schach and Starfield (1973) developed several measures of short-term disability defined as any temporary reduction of activity as a result of an acute or chronic condition. Disability was measured by days spent in bed and days of reduced activity in a 2-week period. However, Schach and Starfield felt that these types of measures might be of limited usefulness for very young children because of a lack of clarity about what a bed day is or what it means to be restricted in activity. They therefore developed three specific disability indicators: (1) eating problems in a 2-week period, (2) sleeping problems in a 2-week period, and (3) irritability in a 2-week period. A summary indicator was also constructed that measured sickness in a 2-week period (any child with one or more bed days, one or more restricted activity days, or another health problem).

Haggerty, Roghmann, and Pless (1975) included several individual-item measures of disability in the Rochester Child Health Survey. These items referred to the number of days lost from school or play because of illness in the last 2 weeks and the number of days the child had to stay in bed because of illness during the last 2 weeks.

Both specific measures of disability (e.g., bed days) and summary measures of disability that combine items reflecting the extent of changes in activities have been constructed for children. Although differing recall periods (e.g., 2 weeks, 4 weeks, 1 year) have been used by the investigators, the measures are, in general, quite similar across investigations. If only single days of change are counted, it is possible to order these changes in terms of increased severity. For example, a day of restricted activity can be considered a less severe limitation than a day of activity loss, whereas a day of activity loss may be considered less severe than a day spent in bed. It is more difficult to order combinations of days (e.g., 2 or more restricted activity days versus 1 day of activity loss) according to severity of limitation. In addition, there may be a loss of information when disability measures are combined into summary indicators, because several different types of activity change could result in the same score.

C. Empirical Studies of Physical Health Measures

This section summarizes the results of empirical studies identified in the literature review that report on the prevalence of physical limitations, on the reliability and validity of measures, or on associations between measures and demographic and socioeconomic characteristics. Results are not given here for measures of disability days because they will be discussed in depth when HIS measures of disability days for children are described in a subsequent study.

PREVALENCE

Prevalence data indicate the percentage of physical health problems and levels of functional limitation defined in terms of specific or aggregate categories in general populations. They will be useful in comparing the prevalence of functional limitations reported for general populations of children with that assessed using HIS functional status measures. Table 9 summarizes the percentages of children from general populations reported in five published studies as having one or more limitations in functioning. These percentages are based solely on reports by proxy respondents (generally a parent). Information regarding prevalence was available for three categories of functioning and for two aggregate indicators.

Two factors should be kept in mind when interpreting and comparing the data in Table 9: (1) The age ranges on which estimates were based vary across studies. (2) Differences in the definitions of categories of activities or in overall indices make strict comparisons between studies difficult.

For children in general populations, limitations in physical activities ranged from 1.5 percent to approximately 11 percent as a function of the reporting periods used to measure the activity and the age of the children (see Table 9). There was also variation in estimates of role activity limitations (ranging from less than 2 percent to 7 percent). There were no studies identified that measured mobility or self-care activities limitations in general populations of children and reported prevalence rates for children separate from those of adults. Estimates of prevalence

Table 8

MEASURES OF DISABILITY DAYS

Focus of Measure	Canadian Sickness Survey (1960)	Commission on Chronic Illness (1957); Trussell and Elinson (1959)	National Health Interview Survey (NCHS, 1978)	Isle of Wight (1970)	Schach and Starfield (1973)	Haggerty, Roghmann, Pless (1975)
Feeling less well than usual	*Complaint Period* Series of days (a single day to a year) when a person continuously experiences a health disturbance and is never free of symptoms.	Feeling less well than usual			Feeling less well than usual	
Restricted activity			*Restricted Activity Day* A day when a person limits its usual activities for the entire day because of illness or injury ("usual activities" mean things a person would ordinarily do on that day). Sunday or holiday activities are things the person usually does on such days--church, visiting, staying home, etc. Persons whose activities are permanently reduced because of a chronic condition might not report any restricted activity days during a 2-week period. Therefore, absence of restricted activity days does *not* imply normal health. Restricted activity does not imply complete inactivity, but a minimum of usual activity. An after-lunch nap or the elimination of a heavy chore does not constitute cutting down on usual activities. A day spent in bed or home from school because of illness or injury is a restricted activity day.	Days when there is difficulty or inability to perform any ordinary activities.	*Restricted Activity Day* Days during last 2 weeks when child was unable to pursue usual activities because of not feeling well (bed days are not counted in this category). *Eating Disability Days* Days during last 2 weeks when child had unusual eating problems for part or all of day. *Irritability Days* Days during last 2 weeks when child was unusually irritable or cross for all or part of day. *Sleeping Disability* Days in last 2 weeks when child had unusual trouble sleeping.	

Focus of Measure	Canadian Sickness Survey (1960)	Commission on Chronic Illness (1957); Trussell and Elinson (1959)	National Health Interview Survey (NCHS, 1978)	Isle of Wight (1970)	Schach and Starfield (1973)	Haggerty, Roghmann, Pless (1975)
Activity loss	*Disability Period* Series of days (a single day to a year) when a person was continuously away from usual activity. For persons not gainfully employed, time included all days when they were unable to participate in usual activities (e.g., going to school).	*Day of Disability* A day when a person was kept from a usual activity because of a particular condition. Days spent in a hospital or nursing home were included. *Day Kept Indoors* A day when a person spent all or part of the day indoors (excludes day spent in bed).	*School-Loss Day* A normal school day missed because of a specific illness or injury. Days lost from school are determined only for children 6-16 years.	*School Absences* Half-days absent from school in previous school year.		*School loss* Days lost from school or play because of illness in the last 2 weeks.
Day in bed	*Bed Period* Series of days (1 to 365 full days) when a person was in bed, at home, or in a hospital (i.e., the portion of a disability period when the person is not up and around).	*Day in Bed* A day when a person spent all or part of it in bed.	*Bed-Disability Day* A day when a person spent all or most of it in bed because of a specific illness or injury. All or most of a day is defined as more than half of daylight hours. All hospital days for inpatients are considered days of bed disability even if patient was not actually in bed at the hospital.		*Days in Bed* Days during last 2 weeks when child spent all or part of day in bed because of not feeling well (includes days spent in hospital or convalescent home).	*Bed Days* Days (during last 2 weeks) child stayed in bed because of illness.
Summary indicators		*Total Days of Disability* Sum of days in bed, days indoors, and other days a person cannot pursue usual activities	*Person-Day* Person-days of restricted activity, bed disability, etc., are days of various forms of disability experienced by any one person. The sum of days for all persons in a group represents an unduplicated count of all days of disability for the group. *Condition-Day* Condition-days of restricted activity, bed disability, etc., are days of various forms of disability associated with any one condition. Since any particular day of disability may be associated with more than one condition, condition-days may sum to more than person-days.		*Sick Days* Days in a 2-week period when a child had one or more bed days, one or more restricted activity days, or experienced another health problem.	

Table 9

SUMMARY OF PREVALENCE OF LIMITATIONS IN FUNCTIONING IN GENERAL POPULATIONS OF CHILDREN

Category	Percent Limited at All	Measure/Scale Name	Sample/Date Studied	Investigator/Study
Physical activity	5.4	Exercise restricted--ever	Ages 6-11 N=7119 (1963-65)	NCHS (1973)
	1.5	Exercise restricted--now	Ages 6-11 N=7119 (1963-65)	NCHS (1973)
	11.1	Exercise restricted--ever	Ages 12-17 N=6768 (1966-70)	NCHS (1973)
	4.6	Exercise restricted--now	Ages 12-17 N=6768 (1966-70)	NCHS (1973)
Role activities	2.0	Activity-limiting impairment or chronic disease	Ages 0-4 N=357 (1968-1969)	Schach and Starfield (1973)
	4.0	Activity-limiting impairment or chronic disease	Ages 5-9 N=366 (1968-1969)	Schach and Starfield (1973)
	7.0	Activity-limiting impairment or chronic disease	Ages 10-14 N=380 (1968-1969)	Schach and Starfield (1973)
	4.0	Activity-limiting impairment or chronic disease	Ages 0-14 N=1103 (1968-1969)	Schach and Starfield (1973)
	2.3	Major activity component of Chronic Activity Limitations	Ages < 6 N=19,783 (1974)	NCHS (1977a)
	1.7	Major activity component of Chronic Activity Limitations	Ages 6-16 N=43,174 (1974)	NCHS (1977a)
	1.9	Major activity component of Chronic Activity Limitations	Ages < 17 N=62,957 (1974)	NCHS (1977a)
	1.9	Major activity component of Chronic Activity Limitations	Ages < 17 N=60,391 (1976)	NCHS (1977b)
Leisure activities	2.6	Other activity component of Chronic Activity Limitations	Ages 6-16 N=43,174 (1974)	NCHS (1977a)
	1.8	Other activity component of Chronic Activity Limitations	Ages < 17 N=62,957 (1974)	NCHS (1977a)
Aggregate activities	7.0	Function Status Index	Ages 2-5 N=not given (1972-1973)	Reynolds, Rushing, and Miles (1974)
	9.0	Function Status Index	Ages 6-15 N=not given (1972-1973)	Reynolds, Rushing, and Miles (1974)
	2.3	Chronic Activity Limitations	Ages < 6 N=19,783 (1974)	NCHS (1977a)
	4.3	Chronic Activity Limitations	Ages 6-16 N=43,174 (1974)	NCHS (1977a)
	3.7	Chronic Activity Limitations	Ages < 17 N=62, 957 (1974)	NCHS (1977a)
	3.7	Chronic Activity Limitations	Ages < 17 N=60,891 (1976)	NCHS (1977b)

of these limitations when measured by aggregate activities measures (the Function Status Index and the Chronic Activities Limitation Scale) ranged from approximately 2 percent to 9 percent (see Table 9).

In summary, the percentage of children limited at all is quite small in general populations of children. The maximum prevalence of any limitation reported was about 11 percent (NCHS, 1973). This figure was for "ever restricted" exercise, which may not be a current measure of limitation and probably involves a less severe limitation category (i.e., physical activities). Based on these data, it is expected that large samples will be required to achieve precision of measurement of these limitations in hypothesis-testing situations unless repeated measurements are available in studies.

RELIABILITY

Reliability of measurement refers to the extent to which measured variance is due to true score (rather than random error). Reliability is a prerequisite to the use of a score for any purpose. None of the studies reported reliability estimates for any of the items or scales. Because investigators did not address reliability issues when measuring physical health in terms of functioning, it cannot be determined whether problems of reliability may exist for some or all of the measures. This uncertainty, in turn, clouds the validity of measures.

VALIDITY

Knowing that a measure is reliable, i.e., that it contains information about something as opposed to random error, is not enough. It is also necessary to know that the measure is valid. Validity refers to the extent to which measures assess what they were intended to measure. In the case of health status, validity refers not only to whether each measure reflects differences in individual health but also to the extent to which the intended health construct is measured. Unless the measure is valid, scores cannot be interpreted or used to study relationships between the measure and other variables of interest. For example, unless a measure constructed to assess some aspect of physical health is valid, scores on that measure cannot be interpreted as reflecting any information about physical health, nor can they be used to study the relationships between physical health and other health status dimensions or other variables (e.g., generosity of health insurance).

Several methods are used to evaluate validity. To make an evaluation, one must synthesize information across these methods and formulate a judgment as to what construct(s) the measure reflects most. A successful evaluation will indicate two things: that the scale measures the one construct it was designed to measure most, and that it does not measure any other construct. The American Psychological Association's guidelines (APA, 1974) on how the validity of measures should be evaluated provided the framework for this review. Three types of validity evidence are identified by the American Psychological Association: criterion-related validity, content validity, and construct validity.

Criterion-Related Validity

Criterion-related validity is assessed when a respondent's score on one measure is used to predict that respondent's score on another measure of the same construct. The score being predicted is referred to as the criterion; it is either a measure for which validity has already been demonstrated or an independent assessment of the construct. For example, a criterion measure of physical health could be a previously validated measure of physical health or a valid medical assessment of an individual's physical health status. Because well-validated measures of health status for children were not available, and because physician assessments may not be valid or practical for HIS purposes, criterion-related validity studies were not possible for child HIS measures.

Content and Construct Validity

Content validity refers to whether items in a given battery adequately represent all relevant constructs of interest, and can be evaluated at two levels. First, within a specific dimension of health status (e.g., physical health), at least one item should represent each construct included in that health dimension (e.g., physical and role activities); second, within each relevant construct, enough items should be included to sample all aspects adequately (i.e., within role activities, items referring to aspects such as school, leisure, etc.). Reynolds, Rushing, and Miles (1974) reviewed measures and items from previous studies of physical functioning (primarily for adults) and selected items from these sources to correspond to the functional levels defined by Patrick, Bush, and Chen (1973). The other investigators did not discuss the origin of their items or their intent with respect to item content.

Reynolds, Rushing, and Miles (1974) appear to have developed items that represent the universe of possible areas of functioning that might be influenced by changes in the health status of children. Other studies covered fewer categories, but within a specific category they appeared to represent important areas of functioning.

Studies of construct validity are very useful in helping one to understand the meaning (validity) of a score when no adequate criterion measure exists, or when content validation is unreliable. Several different approaches can be used to assess construct validity; in essence, they involve studies of the relationships between the measure of interest and other variables that the measure would be expected to relate to if it measured the construct it was intended to measure. Based on findings reported in the literature for adults and on theoretical considerations, hypotheses regarding the strength and direction of relationships that might be expected are proposed (e.g., that measures of childrens' physical health reported by parents should correlate with physicians' ratings after clinical examination). To the extent that relationships conform to hypotheses, they support both the construct validity of the measure and the theory underlying the relationships.

Validity of Measures of Physical Functioning

What little evidence of validity was available in published studies of measures of children's functional limitations is best interpreted within the framework of construct validity. Data reported in the literature that could provide evidence of construct validity involved relationships between measures of functioning and other health constructs or sources (e.g., clinical examination findings).

If measures of physical functioning are valid indicators of physical health, the following relationships would be hypothesized: (1) very strong associations (r's > 0.60) among measures representing different categories of activities (e.g., physical, self-care, role); (2) substantial associations (r's > 0.40) between measures of functional status and other physical health constructs (e.g., number of chronic or serious conditions); (3) substantial associations between measures of functional status and ratings of general health; (4) significant (but not substantial) associations (r's such that p < .05) with mental and social health constructs and with the use of health care services; and (5) substantial correspondence between proxy and physician assessments of functional status.[1] These hypotheses are suggested because physical health measures should be most related to other physical health measures, next most related to measures of other health status constructs, and least related to variables that only indirectly reflect health status (see findings for adults in the HIS in Stewart, Ware, Brook, et al., 1978). The published findings for children relevant to these hypotheses are sparse. Only two general population studies reported data concerning relationships between their measures and other health constructs, but Reynolds, Rushing, and Miles (1974) did not report their validity findings separately for children.

In the National Health Examination Survey (NCHS, 1973), children (aged 6-11) and youths (aged 12-17) whose exercise was restricted at the time of medical examination were substantially more likely (in terms of percentages) to be found physically abnormal (i.e., to have some chronic ailment) on examination than those whose exercise had previously been restricted but was not so at the time of the examination. For children, but not for youths, physical abnormality findings were also significantly higher for those whose exercise was restricted currently than for those who had never been restricted.

It appears, from the little evidence available on validity, that there is some relationship between measures of functioning and physical examination findings. However, no studies of associations among measures representing different categories of activities, between measures and general health ratings, or between measures of functioning and health-related variables, such as use of medical services, were found in the literature. It is clear that published measures of physical functioning for children have not been well validated.

Functioning and Demographic and Socioeconomic Characteristics

For children aged 0-13, associations between functional limitations that are attributable to health (as distinct from physical developmental immaturity) and age, sex, income, and race are not considered evidence of validity for physical health measures; they are summarized here for information purposes only.

Age. Functional limitations generally increase with age. Schach and Starfield (1973) showed activity-limiting impairments increasing from 2 percent at 0-4 years, to 4 percent at 5-9 years, to 7 percent at 10-14 years. Similarly, the National Health Examination Survey (NCHS, 1973) showed exercise restrictions increasing slightly over the years (approximately 1 percent for 6-year-olds to approximately 3 percent for 11-year-olds); whereas limitations in total activity (e.g., limited participation in athletics, in extracurricular activities, and in kind or amount of play, or limited to certain types of schools or in school attendance) increased from about 2 percent among children under 6 to about 4 percent among children aged 6-16 according to the National Health Interview Survey (NCHS, 1977a). These differences tended to disappear when measures focused primarily on limitations in major activities (e.g., ability to engage in school or preschool activity). Reynolds, Rushing, and Miles (1974) found a slight age trend in their aggregate measure of all activities categories (the Function Status Index). For analytic purposes, children 2-5 years and 6-15 years were grouped together; data on children 0-2 years were not collected. Functional limitations in at least one activity category were present for approximately 7 percent of the children 3½ years old (i.e., midpoint of the group 2-5 years old) and for approximately 9 percent of those 10½ years old (i.e., midpoint of the group 6-15 years old).

Sex. In the National Health Examination Survey (NCHS, 1973), boys tended to show more exercise restrictions (present now or ever) than girls. Similarly, boys under 17 years of age tended to show slightly more limited total activity because of chronic conditions than did girls in the National Health Interview Survey (NCHS, 1977a). On the other hand, when the measures focused primarily on limitations in major activities, there appeared to be no sex differences in 1974 or 1976 data (NCHS, 1977a, 1977b).

Race. There appeared to be no race difference with respect to limitation in the amount or kind of total or major activity according to the National Health Interview Survey (NCHS, 1977a). Similarly, no consistent trend was seen between exercise restrictions and race in the National Health Examination Survey (NCHS, 1973).

Income. Based on data reported in the National Health Interview Survey (NCHS, 1977a), there appeared to be a slight trend toward more limitations in the amount of total activity in children whose family income was low (about 5 percent) than in children whose family income was high (about 3 percent). This same trend occurred for present exercise restrictions among youths 12-17 years old, but not among children 6-11 years old examined in the National Health Examination Survey (NCHS, 1973).

D. Defining Mental Health

For adults, operational definitions used to assess mental health in general populations have been shifting in recent years (see Ware, Johnston, Davies-Avery, et al., 1979). Early measures, reflecting older definitions, assessed both physical and psychological manifestations of health states. More recent measures for adults concentrate almost exclusively on psychological states and include a more comprehensive set of psychological symptoms. In addition, measurement of mental health in general adult populations has expanded from an almost exclusive focus on assessing negative states or symptoms (e.g., sadness, tension) to include positive states (e.g., happiness, interest in life) as recommended by the WHO. This broadening of the operational definition of mental health relates to the growing interest in assessing the quality of life among those who are otherwise free of overt psychiatric impairment that inhibits performance of their major activities. Thus, general population measures of mental health for adults can be classified on a continuum between assessment of positive and negative states: The majority still emphasize the negative end of the continuum, others represent a mixed focus, and a few concentrate on the positive end of the continuum (see Ware, Johnston, Davies-Avery, et al., 1979).

For children, these trends in the operational definitions of mental health constructs are not apparent in either the mental health literature or mental health instruments. In fact, mental health has not been conceptualized, operationalized, or measured as "mental health" in the children's literature. Instead, it is referred to by a variety of other terms and concepts: abnormal behavior, psychiatric disorder, psychiatric impairment, emotional disorder, and behavior problems. In general, these alternatives focus on behaviors that affect a child's ability to perform or adjust adequately in different contexts or relationships (e.g., home, school, community) and that deviate from (i.e., exceed) age-specific normative behavior.

As discussed in greater detail in Sections E and F, mental health measurement for children has focused primarily on overt, tangible behavioral acts (e.g., temper tantrums, bedwetting, speech problems, fighting, stealing) that mix behavioral, physical, and psychological aspects of health status. Generally, the emphasis on problem behavior and psychopathology has been at the expense of more balanced psychological assessment involving both positive and negative feeling states (e.g., happiness, sadness, ability to relax, tension), as well as positive and negative actions. Even very recent child behavior checklists that have begun to assess positive attributes, such as social competence (e.g., Achenbach, 1978), do not address more positive feeling states, such as happiness or sense of positive well-being. In effect, there appears to have been little or no interest in operationalizing the notion of the quality of life for children. Thus, by standards for adults, definitional issues in the children's mental health literature remain largely unsettled and operational definitions are negatively oriented.

E. Approaches to Measurement of Mental Health

Unlike the mental health measurement literature for adults, there are only a few studies that focus on measuring the mental health of children in general populations. In all studies identified, a parent (proxy) was the primary respondent for the child; no studies reported children under 14 years of age as the primary respondent. The review considers three general types of measures: (1) overall mental health measures designed to yield a single screening score indicating either the need for further psychiatric evaluation or the amount of behavior deviance relative to other children of the same age and sex (i.e., normative assessment), (2) construct-specific measures of mental health that yielded only one score on that construct (e.g., anxiety) to be used for either screening or normative assessment purposes, and (3) single mental health items designed to provide normative data on aspects of children's behavioral and psychological development. Problem behavior inventories, a subgroup of construct-specific measures, are discussed separately as a fourth type of mental health measure because they appear to differ conceptually from other construct-specific measures. These inventories are designed to produce empirically determined and named scales through techniques such as factor analysis, instead of measures based on a priori item groups that were designated by the investigator. They appear to be more oriented toward research and, potentially, outcome studies rather than screening or normative assessment.

Investigators who developed multi-item measures, those whose instruments contained anxiety, depression, and positive well-being items, and those whose instruments could potentially serve as outcome measures were of special interest. Given the HIS measurement strategy and the desire to include those three constructs in the mental health battery, this approach seemed most appropriate. Six studies that were conducted in general populations to measure children's mental health and were published between 1964 and 1978 are summarized in Table 10. It should be noted that both the purposes and age ranges studied vary considerably; most investigators lumped wide ranges together, using the same instrument(s).

OVERALL MEASURES

Three mental health measures found in the literature were designed to yield a single screening score indicative of potential psychiatric disorder or impairment, or that was indicative of behavior deviance (in a normative sense). All three were to be used in general populations of children:

1. The Psychiatric Disorder Index developed by Rutter (Rutter, Tizard, and Whitmore, 1970) and originally used as a screening instrument for all children 11 and 12 years old in the Isle of Wight, Great Britain, study.
2. The children's Behavior Deviance Index developed by Shepherd, Oppenheim, and Mitchell (1971) for use in the countywide study of the mental health of children 5-15 years old in Buckinghamshire, Great Britain.
3. The 35-item psychiatric screening instrument derived by Langner, Gersten, McCarthy, et al. (1976) as part of a New York City household interview study of children at potential risk of a psychiatric disorder.

CONSTRUCT-SPECIFIC MEASURES

Two investigators constructed five construct-specific measures for assessing abnormality (in a normative sense) or potential psychiatric disorder; these measures were for use in general populations of children:

1. Lapouse and her associates (e.g., Lapouse, Monk, and Street, 1964) developed three scales for use in their general population survey of children 6-12 years old in Buffalo: the Personal Behavior Area Scale, the Adjustment Scale, and the Fears and Worries Scale.
2. Rutter, Tizard, and Whitmore (1970) derived Neurotic and Antisocial subscales from items in their overall mental health screening measure by selecting the five items that best distinguished neurotic and antisocial children, respectively, in a confirmed population of clinic children.

PROBLEM BEHAVIOR INVENTORIES

Achenbach (1978) and Achenbach and Edelbrock (1979) constructed a Child Behavior Checklist (CBCL) consisting of 118 child behaviors and problems for use in classification, diagnosis, research, and outcome work in children's mental health

Table 10

SUMMARY OF INFORMATION REGARDING MAJOR MENTAL HEALTH MEASURES OF CHILDREN REPORTED IN THE LITERATURE

Investigation/ Study	Year(s) Study Conducted	Purpose of Study/ Use of Measures	Age Range of Sample	Location of Study	Type of Sample	Methods of Data Collection	Reference
Lapouse, Monk, Street	1955-1957	Establish objective criteria by which abnormal behavior may be reliably evaluated and develop a method whereby such behavior may be reproducibly measured	6-12	Buffalo, New York	Representative sample of general, non-institutionalized population	Interviewer-administered questionnaire to mother or mother substitute	Lapouse, Monk, Street (1964)
Isle of Wight	1964-1965	Determine the prevalence of psychiatric disorder in 10- and 11-year-old children resident on the Isle of Wight	10-11	Isle of Wight, England	Total population of children aged 10-11 living on the Isle of Wight	Self-administered questionnaire by mother or mother substitute and father or father substitute	Rutter, Tizard, Whitmore (1970)
National Health Examination Survey	1963-1965	Determine the health status of a representative sample of U.S. children by medical examination and medical history	6-11	United States	Probability sample of general, noninstitutionalized population	Both interviewer-administered and self-administered medical history questionnaire to parent or parent substitute	NCHS (1971b)
Shepherd, Oppenheim, Mitchell	1961	Determine how behavior problems were distributed in a population of supposedly "normal" children and to determine the intensity and frequency of deviant behavior within the sample at follow-up 2.5 years later	5-15	Buckinghamshire, England	90% sample of all children aged 5-15 enrolled in public schools in that country	Self-administered questionnaire by mother or mother substitute	Shepherd, Oppenheim, Mitchell (1971)
Langner, Gersten, McCarthy, et al.	1966	Construct an inventory to screen children residing in the community for psychiatric impairment	6-18	New York, New York	Representative sample of children in Manhattan	Interviewer-administered questionnaire to mother or mother substitute	Langner, Gersten, McCarthy, et al. (1976)
Achenbach; Achenbach, and Edelbrock	not given	Develop a standardized, reliable, and well-validated system for measuring children's behavioral problems and competencies for use in research and clinical settings	5-16	Contributing mental health centers across the United States	Sample of children referred for behavioral problems to community mental health centers	Self-administered checklist by mother or father or parent substitute	Achenbach (1978), Achenbach and Edelbrock (1979)

settings. The items completed by parents of clinic-referred children were factor analyzed separately for boys and girls at several age levels. The resultant scales were then standardized on a general household sample of children at the same age levels from the Washington, D.C., area.

SINGLE-ITEM MEASURES

The National Health Examination Survey (NCHS, 1971b) constructed a series of single items to provide normative data regarding behavior problems as part of a comprehensive survey fielded to determine the health status of a representative sample of U.S. children. Items in the Medical History Questionnaire completed by the mother or a mother-substitute covered a variety of behaviors relating to the mental health of children aged 6-11 years.

CONTENT ANALYSIS: OVERALL MEASURES

Our content analysis of items in overall mental health measures addressed a number of important issues:

- *Face validity:* the extent to which items in the measures appear to assess the mental health constructs they were intended to measure.
- *Content validity:* whether items represent all the important aspects of mental health that might be included to measure a particular construct.
- *Polarity:* whether the content of items includes descriptions of both negative and positive aspects of the mental health construct being measured.

All investigators briefly discussed what they considered to be the appropriate content of general population mental health measures for children; none did so in terms of a specific theory of child development, etiology, or psychopathology. Rutter, Tizard, and Whitmore (1970) selected items for their Psychiatric Disorder Index that they believed parents could reliably report, that required a minimum of inference, that occurred with relative frequency, and that represented the kinds of problems for which children at these ages (10 and 11 years) attend child guidance clinics. The content of Shepherd, Oppenheim, and Mitchell's (1971) Behavior Deviance Index was thought to represent a broad range of behavior problems, to lead to relatively objective reporting by parents, and to exclude items that might result in families refusing to continue in the study (e.g., questions concerning the child's overt delinquent, aggressive, and sexual behaviors). Langner, Gersten, McCarthy, et al. (1976) intended to construct items with content that was descriptive rather than interpretive, that was predictive of psychiatric impairment across a broad age range (6-18), and that represented several types of behavior disorder and several contexts of functioning.

In general, the criteria for selection of content discussed by these investigators have substantial relationship to traditional concerns regarding content validity of measures (e.g., sampling a broad range of behavior problems that interfere with adequate functioning or are indicative of clinic populations' behavior). However, some criteria focused on more pragmatic matters (e.g., ensuring adequate reliability by not including items requiring much parental inference, or not alienating parents in order to prevent sample attrition). Adherence to these criteria suggests that pragmatic issues were as important as traditional content validity (i.e., adequate representation of a universe of possible items assessing children's psychological well-being) in making final content decisions. These criteria may have posed unnecessary restrictions on item selection because no empirical evidence was identified suggesting that parents rate behavioral items more reliably than psychological items, or suggesting differential sample attrition as a result of "sensitive" survey subject matter.

The content of items used in the three mental health measures that yield a single overall score are summarized in Table 11. These measures are identified in the columns of the table. We have divided item content into four major categories: psychological (e.g., affect, feeling states), nonpsychological (e.g., physical symptoms), behavioral (e.g., observable actions), and social relations. Items in the psychological category are further categorized in terms of the specific construct they describe: anxiety, depression, or "other." Items in the nonpsychological category refer to physical or psychosomatic symptoms. Social relations items are categorized separately (a) because social health is a major component of health status in the HIS and (b) to note the mental and social relations content in several mental health measures for children. Table 11 illustrates the relative reliance of each measure on the four major categories, and the general scope of items focusing on psychological or nonpsychological manifestations of mental health, behavior deviance, or social relations.

Four general trends in the content of these overall mental health measures are supported by the information in Table 11. First, all measures concentrate on the negative end of the mental health continuum; each assesses children's mental health by asking the proxy (parent) to indicate the child's behavioral, psychological, physical/psychosomatic, and social relations problems or difficulties. There are no positively worded items in these screening instruments.

Second, assessment of mental health and social relations for children in each of the overall measures is primarily in terms of behavioral items (i.e., tangible, overt behaviors or actions) that require relatively little inference on the part of the respondent. Even within the psychological category (e.g., anxiety and depression areas), many items have tangible referents or antecedents (e.g., fear of new people, animals, new situations; suicidal talk). Most of the items in each scale concern body control, acting out, conduct, or antisocial behaviors, as distinct from the more affective/mood, or feeling-state-oriented questions that require a certain amount of inference by the rater.

Third, two measures—Rutter, Tizard, and Whitmore's (1970) Psychiatric Disorder Index and Shepherd, Oppenheim, and Mitchell's (1971) Behavior Deviance Index—contain physical symptom items that give some weight to the assessment of mental health in terms of physical rather than psychological or behavioral symptoms.

Fourth, the measures of Rutter, Tizard, and Whitmore (1970) and Langner, Gersten, McCarthy, et al. (1976) include items designed to assess aspects of children's social and interpersonal relations, as well as psychological and behavioral content. Thus, these measures do not appear to distinguish mental from social health as defined in the HIS.

Table 11

CONTENT OF OVERALL MEASURES OF MENTAL HEALTH

Categories	Investigators		
	Rutter, Tizard, Whitmore (1970)	Shepherd, Oppenheim, Mitchell (1971)	Langner, Gersten, McCarthy, et al. (1976)
PSYCHOLOGICAL			
Anxiety	Worried[a] Irritable Fearful/afraid of new situations[a]	Fearful of unfamiliar people Afraid of animals Afraid of dark Irritable Fearful of other children Worried	
Depression	Miserable, unhappy, tearful or distressed		Rarely or never in happy mood Sad, depressed mood Talks of killing self now Talked of killing self in past
Other	Fussy or overparticular	Jealous Dislikes school	Unhappy at school Thinks teachers and others against him Often in angry mood
NONPSYCHOLOGICAL			
Physical symptoms	Headaches Stomachaches/vomiting Biliousness[a]	Constipation Headaches Stomach pains Vomits Diarrhea	
Academic			Average grades failing
BEHAVIORAL	Wets bed/pants Loses bowel control Temper tantrums Tears at school[a] Stammers/stutters Other speech problems Steals[b] Eating difficulty Sleeping difficulty[a] Restless Squirmy/fidgety Cannot settle down Destroys things[b] Fights Bullies[b] Twitches/tics Sucks thumb/finger Bites nails Disobedient[b] Tells lies[b]	Wets bed Poor bowel control Temper tantrums Cries Always hungry Complains/whines a lot Steals Fussy over food Restless in sleep Nightmares Restless/fidgety Very destructive Bitter quarrels Twitches Sucks thumb/finger Bites nails Disobedient Drawn into self/out of touch Moods very changeable Tells deliberate untruths Truant Sulks Wanders from home Difficulty learning to read	Cries a great deal Throat clearing Has been in trouble with police Battles over food Picky/choosy with food Wakes in panic often Often fidgety Falls down often When loses temper, throws and breaks things Often blows up easily with others Teases other children Hurt often/many accidents Refuses when directed by others Bad home behavior Lies so much, can't believe Often lies to protect self Comes home at promised time rarely or never Runs away from home 4-5 times Often does rash things Loses train of thought Thinks slowly Trouble remembering things
SOCIAL RELATIONS	Not liked by others Tends to do things on own; rather solitary		Has no close friends Doesn't keep friend for year or more Gets along with other children at school poorly Spends too much time alone Often withdraws from others

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[a] These items comprise the Neurotic subscale.

[b] These items comprise the Antisocial subscale.

These generalizations have implications for content validity. If one accepts the proposition that a valid measure of children's mental health should assess both the positive and negative ends of the mental health continuum, should focus primarily on psychological (rather than behavioral) phenomena, and should deal exclusively with mental (as distinct from physical and social) health content, each overall measure reviewed is questionable on validity grounds.

Score distributions on these mental health measures are bound to be highly skewed in general populations of children because they assess the presence or absence of negative states and problem behaviors exclusively, rather than both positive and negative levels of well-being. This is unfortunate because assessment of both positive and negative mental health states would facilitate interpretation of the continuum defined by any construct and the meaning of scores. Inclusion of both types of measures would also increase variability of scores and allow investigators to determine whether specific treatments differentially affect the positive and negative ends of the continuum being studied. Moreover, emphasis on reporting the more overt, tangible behavior problems of children may be occurring at the expense of ignoring more subtle positive and negative intrapsychic manifestations, capacities, and concerns of children within their families.

From the content analysis presented in Table 11, the Psychiatric Disorder Index (Rutter, Tizard, and Whitmore, 1970) and the Behavior Deviance Index (Shepherd, Oppenheim, and Mitchell, 1971) can be expected to perform in somewhat the same way as measures of general health and mental health; the Rutter et al. (1970) and Langner et al. (1976) instruments, because they mix social relations and mental health items, may perform to some extent as measures of social health.

CONTENT ANALYSIS: CONSTRUCT-SPECIFIC SCALES

Content analysis of specific mental health measures should also address the issues of face and content validity, polarity, and operational definitions noted earlier for overall measures. However, generalizations with respect to these traditional content analytic concerns could not be framed because the five construct-specific mental health measures under review varied so widely in content domain, construction, and availability of published information. In effect, usual content analytic issues could only be addressed to Lapouse, Monk, and Street's (1964) Fears and Worries Scale.

Lapouse et al. and Rutter et al. alluded to what they thought to be the appropriate content domain of their construct-specific measures. Again, neither formulated their items with respect to specific developmental or psychopathological theories.

Lapouse, Monk, and Street (1964) conceived the Personal Behavior Area Index to include the broad topics relating to the child's body control (e.g., speech difficulties, restless behavior), behavior control (e.g., "wild" behavior in the neighborhood and at school; overactivity) habits (e.g., body functions and bedtime behavior), and a miscellaneous category (e.g., daydreaming). Lapouse (1965) has described the Adjustment Scale as containing items dealing with children's abilities in terms of adequacy of self-concept, mastery of the skills of living, level of energy and drive, and approaches to relationships. Rutter, Tizard, and Whitmore (1970) did not publish a discussion of their Neurotic and Antisocial subscales in terms of traditional content validity issues, but they did suggest the value of these subscales as a means of further differentiating potential psychiatric disorders for children being screened in general populations.

Table 12 presents item content from the Fears and Worries Scale (Lapouse, Monk, and Street, 1964), which was designed to assess that aspect of anxiety. All items appear to assess specific fears and worries (rather than generalized feelings of anxiety), all represent feeling states, and all focus on negative states (as distinct from such items as how much of the time has one felt calm and peaceful, or felt relaxed and free from tension).

For the Personal Behavior Area Index and Adjustment Scale measures, general item content, but not actual items, was reported. Judging from the information available in published reports, almost all the items representing the Personal Behavior Area Index are behavioral rather than psychological or physical symptoms, and all items appear to be negatively worded or problem-oriented. On the other hand, the Adjustment Scale appears to have both psychological and behavioral items and, more interesting—to assess both positive and negative ends of an adjustment continuum by presenting bipolar descriptions of child behavior and situations (e.g., generally acts independently or dependently). Unfortunately, a

Table 12

CONTENT OF ANXIETY MEASURE
Lapouse, Monk, Street (1964)

Item Content	
PSYCHOLOGICAL	
Fears and worries	The dark
	Thunder and lightning
	Going into the water
	Crossing the street alone
	Animals
	Bugs
	Snakes
	Going places alone
	Any particular person
	People like postman, policeman, etc.
	Strangers
	People of different race, skin, color, etc.
	Germs
	Using other's glasses, etc.
	Dirt
	Tests at school
	Little cuts, bruises
	Blood
	Going to doctor, dentist
	Getting lost
	Getting sick, having an accident, dying
	Own health
	Family sickness, accident, dying
	School marks
	Being kidnapped
	Being an adopted child
	Fires breaking out
	Wars, flood, murders
	Going to school

more thorough content analysis cannot be completed without more adequate information regarding specific item content in each scale.

The remaining construct-specific measures, i.e., Rutter, Tizard, and Whitmore's (1970) Neurotic and Antisocial subscales, contained five items each that best discriminated previously diagnosed neurotic and antisocial children, respectively, in a London sample of children attending a psychiatric clinic (see Table 11 for specific items in each subscale). In the Neurotic subscale, two items relating to anxiety are primarily psychological in content, two items are behavioral symptoms possibly indicative of anxiety (e.g., sleeping difficulties), and one item is essentially a physical symptom. For the Antisocial subscale, all five items are behavioral, dealing with overt, acting out (conduct) problems and aggression.

CONTENT ANALYSIS: PROBLEM BEHAVIOR INVENTORIES

A content analysis of the Achenbach Child Behavior Checklist (CBCL) items is especially complex because the item groupings, number of scales, items per scale, and, to a certain extent, the scale names are empirically determined for each sex and age group (6-11 and 12-16 years) and thus vary across the four sex and age groups studied. In order to compare overall item content with previously discussed measures, the original 118 CBCL items have been categorized by the broad content areas used to analyze the three overall mental health measures (see Table 13). As can be determined from that table, more items in the psychological category are included in this scale than in the three overall measures, but the relative proportion of psychological to overt behavioral items is similar to that found in the three overall measures. Consistent with the content analysis of overall measures, the psychological category was divided among anxiety, depression, and "other" items on the basis of manifest content (by the authors of this report), whereas the nonpsychological, behavioral, and social relations areas were not further differentiated. Again, several generalizations can be made about the CBCL content: (1) There are no positive behavioral or psychological items. (2) The relative emphasis is on overt, acting out, and conduct problems. (3) Both physical symptoms and social relations are assessed in the mental health instrument (i.e., physical, mental, and social health components are likely to overlap).

Next, to explore the relationship between the broad classification of CBCL items, based on their manifest item content, and the actual empirical groupings of the items, based on separate factor analyses of the clinic sample parents' responses for each sex and age level, the major scales (factors) are presented in Table 14 by the specific mental health constructs that Achenbach believes the item groupings represent (e.g., aggressive, depressed, etc.). Within scales, items are listed in order of their correlation with the factor (if equal to or greater than 0.30).

Several features of this comparative analysis are worthy of note. First, in this clinic-referred sample, psychological item content (as categorized by the present authors) is found primarily in Achenbach's various Depressed, Obsessive, and Schizoid Scales. For example, the Depressed Scale for boys 6-11 years old generally contains psychological items such as "feels worthless," "feels guilty," and "feels unloved." That particular scale contains few behavioral items (namely, "cries much," "sulks," and "harms self"). Nonpsychological item content (i.e., physical symptoms) is almost exclusively within Achenbach's various Somatic Complaints

Table 13

CONTENT OF THE CHILD BEHAVIOR CHECKLIST

Achenbach (1978); Achenbach and Edelbrock (1979)

Scale Content	Items
PSYCHOLOGICAL	
Anxiety	Fears certain animals, situations, or places
	Fears going to school
	Fears might think/do something bad
	Nervous, highstrung, tense
	Too fearful or anxious
	Worrying
	Shy/timid
Depression	Unhappy, sad, depressed
	Talks about killing self
	Feels worthless or inferior
Other	Can't get mind off certain thoughts; obsessions
	Doesn't seem to feel guilty after misbehaving
	Easily jealous
	Feels has to be perfect
	Feels or complains no one loves him/her
	Hears things that aren't there
	Feels dizzy
	Feels others are out to get him/her
	Feels too guilty
	Sees things that aren't there
	Self-conscious, easily embarrassed
	Strange ideas (to be described)
	Sudden changes in mood/feelings
	Thinks about sex too much
	Too concerned with neatness or cleanliness
	Wishes to be of opposite sex
NONPSYCHOLOGICAL	
Physical symptoms	Allergy
	Asthma
	Constipated
	Overtired
	Overweight
	Physical problems without known medical cause:
	Aches, pains
	Headaches
	Nausea, feels sick
	Problems with eyes
	Rashes, skin problems
	Stomachaches or cramps
	Vomiting
Other	Poor schoolwork
BEHAVIORAL	Acts too young for age
	Argues a lot
	Behaves like opposite sex
	Bowel movements outside toilet
	Bragging, boasting
	Can't concentrate, can't pay attention for long
	Can't sit still, restless, hyperactive
	Clings to adults, too dependent
	Complains of loneliness
	Confused, seems to be in a fog
	Cries a lot
	Cruel to animals
	Cruelty, bullying, meanness to others
	Daydreams, gets lost in his/her thoughts
	Demands a lot of attention
	Destroys own things
	Destroys things belonging to family or other children
	Disobedient at home
	Disobedient at school
	Doesn't eat well
	Eats or drinks things that are not food (to be described)
	Gets hurt a lot, accident prone
	Gets in many fights
	Impulsive, acts without thinking
	Lying or cheating
	Bites fingernails
	Nervous movements, twitching
	Nightmares
	Overeating
	Physically attacks people
	Picks nose, skin, or other parts of body
	Plays with own sex parts in public
	Plays with own sex parts too much
	Poorly coordinated, clumsy
	Refuses to talk
	Repeats certain acts over and over; compulsions
	Runs away from home
	Screams a lot
	Secretive, keeps things to self
	Sets fires
	Sexual problems (to be described)
	Showing off, clowning
	Sleeps less than most children
BEHAVIORAL (cont.)	Sleeps more than most children during day and/or night
	Smears or plays with bowel movement
	Speech problem (to be described)
	Stares blankly
	Steals at home
	Steals outside home
	Stores up things doesn't need (to be described)
	Strange behavior (to be described)
	Stubborn, sullen, irritable
	Sulks a lot
	Suspicious
	Swearing, obscene language
	Talks or walks in sleep
	Talks too much
	Teases a lot
	Temper tantrums, hot temper
	Threatens people
	Thumb-sucking
	Trouble sleeping (to be described)
	Truancy, skips school
	Underactive, slow moving, lacks energy
	Unusually loud
	Uses alcohol or drugs
	Vandalism
	Wets self during the day
	Wets the bed
	Whining
SOCIAL RELATIONS	Doesn't get along with other children
	Gets teased a lot
	Hangs around with children who get in trouble
	Likes to be alone
	Not liked by other children
	Prefers playing with older children
	Prefers playing with younger children
	Withdrawn, doesn't get involved with others

Table 14

CBCL EMPIRICALLY DERIVED SPECIFIC MENTAL HEALTH SCALES, BOYS AND GIRLS, AGES 6-16

	CBCL Scales Boys 6-11 (Achenbach, 1978)	CBCL Scales Girls 6-11 (Achenbach and Edelbrock, 1979)	CBCL Scales Boys 12-16 (Achenbach and Edelbrock, 1979)	CBCL Scales Girls 12-16 (Achenbach and Edelbrock, 1979)
Scale Content	Items	Items	Items	Items
DEPRESSED	*Depressed*	*Depressed*	No scale	*Depressed Withdrawal*
	Feels worthless Feels guilty Needs to be perfect Feels unloved Worrying Sad Fears own impulses Suicidal talk Lonely Cries much Anxious Self-conscious Feels persecuted Sulks Nervous Suspicious Harms self	Worrying Feels worthless Anxious Feels guilty Fears own impulses Sad Feels unloved Feels persecuted Lonely Fears school Needs to be perfect Self-conscious Nervous Clings to adults Withdrawn Is teased Shy, timid Sulks		Withdrawn Sad Secretive Likes to be alone Shy, timid Slow-moving Won't talk Sulks Stubborn Self-conscious Sleeps much Stares blankly Overtired
OBSESSIVE	*Obsessive-Compulsive*	See *Schizoid-Obsessive*	*Obsessive-Compulsive*	*Anxious-Obsessive*
	Strange ideas Can't sleep Sleeps little Strange behavior Obsessions Walks, talks in sleep Stares blankly Daydreams Twitches Hoarding Compulsions Overtired Confused Excess talk Nightmares Anxious		Obsessions Compulsions Strange ideas Hoarding Strange behavior Fears own impulses Daydreams Brags Loud	Anxious Feels guilty Worrying Cries much Feels worthless Needs to be perfect Fears own impulses Lonely Self-conscious Obsessions Nightmares Jealous Nervous Feels persecuted Can't sleep Fears Sleeps little Feels unloved Fears school

[continued]

Table 14—continued

	CBCL Scales Boys 6-11 (Achenbach, 1978)	CBCL Scales Girls 6-11 (Achenbach and Edelbrock, 1979)	CBCL Scales Boys 12-16 (Achenbach and Edelbrock, 1979)	CBCL Scales Girls 12-16 (Achenbach and Edelbrock, 1979)
Scale Content	Items	Items	Items	Items
SCHIZOID	*Schizoid*	*Schizoid-Obsessive*	*Schizoid*	*Schizoid*
	Auditory hallucinations	Visual hallucinations	Feels guilty	Auditory hallucinations
	Visual hallucinations	Auditory hallucinations	Fears own impulses	Stares blankly
	Fears	Strange behavior	Too neat	Strange ideas
	Fears school	Strange ideas	Acts like opposite sex	Daydreams
	Clings to adults	Obsessions	Auditory hallucinations	Strange behavior
	Anxious	Harms self	Dizziness	Sex preoccupation
	Nightmares	Runs away	Needs to be perfect	Visual hallucinations
	Public masturbation	Can't sleep	Fears school	Nightmares
	Shy, timid	Sleeps little	Clings to adults	Fears
		Suicidal talk	Worrying	
		Compulsions		
HYPERACTIVE	*Hyperactive*	*Hyperactive*	*Hyperactive*	*Immature Hyperactive*
	Can't concentrate	Can't concentrate	Can't concentrate	Acts too young
	Acts too young	Acts too young	Hyperactive	Prefers younger children
	Poor school work	Poor school work	Poor school work	Clumsy
	Clumsy	Daydreams	Bites nails	Can't concentrate
	Confused	Clumsy	Nervous	Is teased
	Daydreams	Prefers younger children	Disobedient at school	Picking
	Impulsive	Impulsive	Acts too young	Poor peer relations
	Prefers younger children	Confused	Clumsy	Confused
	Hyperactive	Hyperactive	Impulsive	Hoarding
	Speech problem	Stares blankly	Shows off	Hyperactive
	Destroys own things	Is teased		Clings to adults
		Unliked		Unliked
		Speech problem		Stares blankly
		Disobedient at school		Daydreams
				Thumbsucking
AGGRESSIVE	*Aggressive*	*Aggressive*	*Aggressive*	*Aggressive*
	Argues	Temper tantrums	Threatens people	Temper tantrums
	Disobedient at home	Argues	Temper tantrums	Loud
	Temper tantrums	Disobedient at home	Cruel to others	Stubborn
	Stubborn	Stubborn	Disobedient at home	Screams
	Fighting	Screams	Swears	Teases
	Cruel to others	Loud	Screams	Threatens people
	Threatens people	Cruel to others	Argues	Argues
	Teases	Fighting	Attacks people	Demands attention

[continued]

Table 14—continued

	CBCL Scales Boys 6-11 (Achenbach, 1978)	CBCL Scales Girls 6-11 (Achenbach and Edelbrock, 1979)	CBCL Scales Boys 12-16 (Achenbach and Edelbrock, 1979)	CBCL Scales Girls 12-16 (Achenbach and Edelbrock, 1979)
Scale Content	Items	Items	Items	Items
AGGRESSIVE	Shows off Loud Disobedient at school Attacks people Screams Swears Poor peer relations Sulks Brags Lies, cheats Jealous Moody Demands attention Excess talk Unliked	Teases Moody Threatens people Poor peer relations Demands attention Jealous Sulks Shows off Impulsive Excessive talk Disobedient at school Feels unloved Whining Unliked Brags Cries much Destroys things belonging to others	Stubborn Teases Loud Jealous Moody Hyperactive Impulsive Fighting Sulks Demands attention Nervous Suspicious Excess talk Feels persecuted	Cruel to others Disobedient at home Shows off Excess talk Moody Sulks Fighting Brags Attacks people Jealous Feels persecuted Swears Suspicious Feels unloved
DELINQUENT	*Delinquent* Steals outside home Steals at home Destroys things belonging to others Vandalism Sets fires Truant Runs away Bad friends Lies, cheats Destroys own things Swears Disobedient at school	*Delinquent* Steals at home Steals outside home Lies, cheats Bad friends Runs away Swears	*Delinquent* Steals outside home Steals at home Bad friends Vandalism Lies, cheats Truant Sets fires Destroys things belonging to others Alcohol, drugs Disobedient at school Runs away Destroys own things Poor school work	*Delinquent* Bad friends Lies, cheats Truant Poor school work Alcohol, drugs Disobedient at school Runs away Impulsive Steals at home Steals outside home Swears Can't concentrate Disobedient at home Secretive Prefers older children Lacks guilt
CRUEL	No scale	*Cruel* Acts like opposite sex Cruel to others Cruel to animals Destroys things belonging to others	No scale	*Cruel* Destroys things belonging to others Cruel to animals Attacks people

[continued]

Table 14—continued

	CBCL Scales Boys 6-11 (Achenbach, 1978)	CBCL Scales Girls 6-11 (Achenbach and Edelbrock, 1979)	CBCL Scales Boys 12-16 (Achenbach and Edelbrock, 1979)	CBCL Scales Girls 12-16 (Achenbach and Edelbrock, 1979)
Scale Content	Items	Items	Items	Items
CRUEL (cont.)		Attacks people Fighting Destroys own things		Destroys own things Cruel to others Fighting Steals at home Threatens people Unliked Poor peer relations Vandalism Feels persecuted
SOMATIC COMPLAINTS	*Somatic Complaints* Stomach problems Pains Headaches Nausea Vomits Constipated Dizziness Sleeps much Overtired	*Somatic Complaints* Nausea Pains Stomach problems Headaches Vomits Dizziness Rashes Eye problems Walks, talks in sleep Nightmares Allergy Overtired Sleeps much	*Somatic Complaints* Nausea Pains Stomach problems Headaches Overtired Dizziness Vomits Rashes Eye problems Slow-moving Accident-prone Constipated Worrying Anxious Stares blankly	*Somatic Complaints* Nausea Stomach problems Pains Headaches Dizziness Vomits Eye problems Fears school
SOCIAL WITHDRAWAL	*Social Withdrawal* Unliked Poor peer relations Withdrawn Likes to be alone Is teased Prefers younger children Feels persecuted Slow-moving	*Social Withdrawal* Withdrawn Likes to be alone Secretive Slow-moving Won't talk Sad Sulks Shy Confused Moody Stares blankly	*Hostile Withdrawal* Unliked Poor peer relations Is teased Feels worthless Prefers younger children Feels persecuted Withdrawn Destroys own things Lonely Acts too young Destroys things belonging to others Feels unloved Clumsy Fighting	See *Depressed-Withdrawal*

[continued]

Table 14—continued

	CBCL Scales Boys 6-11 (Achenbach, 1978)	CBCL Scales Girls 6-11 (Achenbach and Edelbrock, 1979)	CBCL Scales Boys 12-16 (Achenbach and Edelbrock, 1979)	CBCL Scales Girls 12-16 (Achenbach and Edelbrock, 1979)
Scale Content	Items	Items	Items	Items
UNCOMMUNICATIVE	*Uncommunicative* Won't talk Secretive Shy, timid Sad Stares blankly Self-conscious Confused Stubborn	No scale	*Uncommunicative* Secretive Shy, timid Won't talk Withdrawn Likes to be alone Sad Self-conscious Stares blankly Slow-moving Sulks Suspicious Stubborn Moody Worrying Confused	No scale
IMMATURE	No scale	No scale	*Immature* Cries much Whining Clings to adults Prefers younger children Wets bed Demands attention Acts too young	See *Immature-Hyperactive*
SEX PROBLEMS	No scale	*Sex Problems* Sex preoccupation Sex problems Prefers older children Feels guilty Excessive masturbation Excessive talk	No scale	No scale

factors. The primary content of Achenbach's Hyperactive, Aggressive, Delinquent, and Cruel Scales is behavioral. For example, all items in the Aggressive Scales (for both sexes and each age group) are behavioral. However, there are behavioral items interspersed throughout Achenbach's other scales (e.g., Obsessive, Schizoid, Social Withdrawal, Uncommunicative). Social relations item content is found primarily in Achenbach's Social Withdrawal Scales, but there is a combination of social relations items and psychological and behavioral items in these scales (e.g., Hostile Withdrawal Scale for boys 12-16 years old and Social Withdrawal Scale for girls 6-11 years old). There is some overlap between the present authors' broad classification of item content and the specific empirically derived scales that Achenbach reports. In general, our "psychological" items are more likely to be found in his Depressed Obsessive, and Schizoid Scales, whereas behavioral items are found in his Hyperactive, Delinquent, Aggressive, and Cruel Scales.

Second, although the CBCL includes relatively more anxiety than depression items with psychological manifestations, three of the four age/sex groups have what Achenbach has labeled as a Depressed factor (scale), while only one of the four groups has an explicitly named Anxiety factor. However, when item content is examined in each of the scales, it appears that there is much overlap between depression and anxiety items in all groups except boys aged 12-16 years (e.g., "worrying," "anxious," "fears own impulses," and "nervous" are each in the Depressed Scales for younger children; and "feels worthless," "feels guilty," etc., are in the Anxiety Scale for older girls). Moreover, the Depressed Withdrawal Scale for older girls contains only one key depression item, "sad, depressed." The Anxious Obsessive Scale for older girls contains several items that correlate well with those in the Depressed Scales for younger children; in addition, the Schizoid Scales for all ages contain several items with manifest anxiety content. To summarize, parents of clinic children apparently perceived substantial overlap between indications of anxious and depressed thought and behavior among their children, or they could not discriminate between those constructs in practice. The issue with respect to the content validity of empirically derived behavior problem checklists is not that the factor names are incorrect, but that the overlap of anxiety and depression content in these psychological scales is apparently large and that Achenbach's scale names may mask this overlap.

Third, there is much consistency across sex and age groups in the emergence of acting out or conduct factors (e.g., Hyperactive, Aggressive, and Delinquent), as well as the leading items within these factors. For example, in the Aggressive Scale for each age/sex group, "temper tantrums," "argues," "disobedient at home," "threatens people," and "stubborn" are consistently among the highest correlating items. Again, for the Delinquent Scales, "stealing" items are the leading ones for three of the four age groups and, with the exception of older girls' items, most of the items in the Delinquent Scales assess the same content domains. Again, for the Hyperactive Scale, "can't concentrate" is the highest correlating item with the factor for three of the four groups (exception: girls 12-16 years old), and "acts too young" is either second or first for three of the four groups.

Fourth, the physical symptoms factor, called Somatic Complaints by Achenbach, emerged for all four groups studied; the item content across groups was remarkably similar, and the four highest correlating items with the factor were the same ones for each group.

Finally, it is clear that even with the use of factor analysis to aid in the development of specific construct measures of mental health, the inclusion of items representing mental (i.e., both psychological and behavioral), physical (including psychosomatic), and social health components leads to the derivation of factors (scales) that often mix components rather than separate them (e.g., the Depressed-Withdrawal Scale for girls aged 12-16). Thus, in terms of content validity of the specific scales derived by Achenbach, the apparent lack of a theoretical orientation makes it very difficult to compare the adequacy of the scales (factors) with nonempirical content analyses based on traditional content validity criteria (e.g., representation of all important aspects of a construct, and relationship between operational definitions and specific item content of factors). Further studies will be required to determine which approach is more useful in assessing content validity.

CONTENT ANALYSIS: SINGLE-ITEM MEASURES

The content of individual behavioral and mental health questions used in the National Health Examination Survey (NCHS, 1971b and 1974) is similar to that included in overall mental health measures (see Table 15). As shown in that table, emphasis is again placed on behavioral rather than psychological item content, and most of the questions included in the survey are negative or problem oriented. Physical health item content is not represented. Items judged by the authors of this report to be representative of social health are discussed in the Social Health portion of the literature review (see Sections H and I). National Health Examina-

Table 15

SINGLE-ITEM MEASURES OF MENTAL HEALTH CONSTRUCTS
National Health Examination Survey (NCHS, 1971b, 1974)

Item Content	
PSYCHOLOGICAL	
Anxiety	How relaxed/tense/nervous Afraid to be left alone in dark
Other	Anything happen that seriously upset/disturbed child
BEHAVIORAL	Wets bed Temper/gets angry (frequently) Speech problems Fussy over food Food consumption Unpleasant dreams/nightmares Sleepwalking Trouble getting child to bed sleep nap (when young) Sucks thumb/finger Runs away from home

tion Survey items were developed to provide normative data regarding selected behavioral characteristics of children 6-11 years old and 12-17 years old in general populations and not to provide psychiatric screening information (NCHS, 1971b; 1974). Within this normative framework, they were not intended to be comprehensive; however, taken together, the item content does appear to overlap with content of items in the overall mental health measures, and individual items would appear to possess as much face validity as those items. Again, anxiety and depression items are relatively underrepresented in this small set of items.

SCALING AND SCORING

Table 16 indicates the number of items in each of the overall, construct-specific, problem behavior inventory, and single-item measures reviewed, the response categories offered, the approaches to scoring, and the mental health construct(s) the scale was hypothesized to measure.

Overall Measures

As shown in the fourth column of Table 16, the Psychiatric Disorder Index (Rutter, Tizard, and Whitmore, 1970) and the Behavior Deviance Index (Shepherd, Oppenheim, and Mitchell, 1971) are scored quite differently. For the Psychiatric Disorder Index, responses indicating presence (and severity or frequency, if appropriate) are summed to produce a total score for children of both sexes and age levels. For the Behavior Deviance Index, deviance was normatively determined. Any item that was recorded as occurring among 10 percent or fewer boys or girls, assessed separately, at each year of age was considered as "deviant" for children at that specific age and sex. Then the number of deviant behaviors reported for each child was summed, and those children exhibiting four or more deviant behaviors were placed in the "deviant" group for their sex and age. No information regarding the scoring and scaling of the Psychiatric Screening Inventory was available. For all measures, the contribution of each content category (i.e., psychological, behavioral, etc.) to the determination of the overall score is influenced by the number of items measuring each category and the categories in which problems are reported. Thus, for all three measures, behavioral problems were given greatest weight.

No empirical tests of the scalability of items in the Psychiatric Disorder Index or the Behavior Deviance Index were identified in the published literature. Rutter, Tizard, and Whitmore (1970) appear to assume that items in the Psychiatric Disorder Index are of equal clinical significance and that grouping them together (without empirical basis) and then summing responses to items will provide a meaningful scale score for the child.

Shepherd, Oppenheim, and Mitchell (1971) seem to have arbitrarily selected 10 percent of the sample at each age as the cutoff for indicating that a behavior (problem) was "deviant"; they then decided simply to sum the number of deviant items for each child on the Behavior Deviance Index without regard to specific item content. Thus for both of these overall measures, it does not seem possible to determine a priori whether some problems endorsed are more clinically significant predictors of potential psychiatric disorder than others, or whether higher (absolute) scores are indicative of greater potential psychiatric disorder than, say, fewer more clinically significant items. In any case, there does not appear to be an adequate empirical or psychometric basis (rationale) for combining items in these measures or to assume that they achieved properties of scales.

Finally, the Psychiatric Screening Inventory measure of Langner, Gersten, McCarthy, et al. (1976) was derived from a factor analysis of more than 200 items and represents seven scales (five items per scale) that correlated well with psychiatrists' ratings of child pathology, based on information from the household interview. Although empirical tests of item groupings were carried out (i.e., factor analyses), the process whereby specific items were selected for the final 35-item Screening Inventory may have precluded selection of the most appropriate items based primarily on psychometric scaling properties. Thus, the decision to pick items that correlated reasonably well with their specific factor and with the psychiatrists' ratings may have weakened the resultant measure. Moreover, because the authors did not report their precise scoring procedures, it is not possible to assess the adequacy of their scoring system from available information.

Contruct-Specific Measures

As shown in Table 16, scores for most construct-specific measures are computed by simply summing "presence" responses to individual items in the scales. The exception is the Adjustment Scale, for which responses are coded on a continuum of positivity-negativity and scores are summed to provide the child's scale score (high scores indicate poorer adjustment). Tests of the appropriateness of assumptions underlying these scoring methods were not reported for any construct-specific scales. Had those analyses been carried out (and reported), the adequacy of scoring algorithms could have been assessed. This is especially true for measures that assumed all items and problems to be equally important or clinically predictive and simply summed items in a multi-item measure (e.g., the Adjustment Scale of Lapouse, Monk, and Street [1964]).

Problem Behavior Inventories

The CBCL (Achenbach, 1978; Achenbach and Edelbrock, 1979) was scored by summing endorsed items in the factor analytically determined scales for each age group and sex. For items to remain in a scale, they had to correlate equal to or greater than 0.30 with the factor; inter-item correlations and internal-consistency reliabilities were not reported for individual scales (factors).

F. Empirical Studies of Mental Health Measures

This section summarizes results of selected empirical studies of the overall, construct-specific, behavior checklist, and single-item mental health measures described in the preceding sections. The results pertain to descriptive statistics for scores, reliability, and validity, as well as to associations between mental health constructs and demographic and socioeconomic variables.

Table 16

SCALING AND SCORING OF GENERAL POPULATION MENTAL HEALTH MEASURES

Scale	Number of Items	Response Categories	Scoring Method	Components of Score	Investigators
OVERALL MEASURES					
Psychiatric Disorder Index	31	Three or 4 item-specific categories indicating presence, severity, or frequency of symptoms/problems.	Algebraic sum of item responses (high score indicates greater potential disorder).	Neurotic and antisocial components.	Rutter, Tizard, and Whitmore (1970)
Behavior Deviance Index	37	Twenty-two items with 3 categories, 15 with 8 categories (based on presence/absence and frequency of symptoms/problems).	For each item, deviance was normatively determined with sex and age. For a given age and sex, an individual item was considered deviant if the behavior was present for less than 10% of the sample; then "deviant" behaviors were algebraically summed for each child within sex and age. If a child had 4 or more "deviant" behaviors present, the child was considered "deviant" for sex and age.	None hypothesized.	Shepherd, Oppenheim, and Mitchell (1971)
Psychiatric Screening Inventory	35	Not reported.	Not reported.	Seven factor analytically determined dimensions: self-destructive tendencies, mentation problems, conflict with parents, regressive anxiety, fighting, delinquency, isolation.	Langner, Gersten, McCarthy, et al. (1976)
CONSTRUCT-SPECIFIC MEASURES					
Anxiety					
Fears and Worries Scale	30	Two categories: presence, absence.	Algebraic sum of "presence" items.	None hypothesized.	Lapouse, Monk, Street (1964)

Scale	Number of Items	Response Categories	Scoring Method	Components of Score	Investigators
Other					
Personal Behavior Area Scale	Not reported	Categories varied with items, but categories not reported.	Algebraic sum of items across various subgroups of items based on presence/absence, frequency, intensity, and duration of behavior (if appropriate); (high score indicates more problems).	Four major subareas: body control, behavior control, habits (body functions and habitual behavior), and "other" behavior.	Lapouse, Monk, Street (1964)
Adjustment Scale	34	Five item-specific categories ranging from extremely positive through moderate to extremely negative categories (e.g., overly friendly to cold and unfriendly).	Algebraic sum of item responses (+2 = most negative to -2 = most positive) (higher scores indicate poorer adjustment).	No hypothesized components.	Lapouse, Monk, Street (1964)
Neurotic Subscale	5	Three or 4 item-specific categories indicating occurrence, severity, or frequency of symptoms/problems.	Algebraic sum of item responses (high score indicates greater potential neurotic disorder).	No hypothesized components.	Rutter, Tizard, Whitmore (1970)
Antisocial Subscale	5	Three or 4 item-specific categories indicating occurrence, severity, or frequency of symptoms/problems	Algebraic sum of item responses (high score indicates greater potential antisocial disorder).	No hypothesized components.	Rutter, Tizard, Whitmore (1970)
PROBLEM BEHAVIOR INVENTORIES					
Child Behavior Checklist	118	Three categories: very/often true, somewhat/sometimes true, not true.	No overall checklist score; specific factor (scale) scores computed by summing item responses from "true" categories.	Empirically-derived (factor analytic) dimensions; number varies with sex and age of child.	Achenbach (1978), Achenbach and Edelbrock (1979)
SINGLE-ITEM MEASURES					
Behavioral items	10	Various item-specific categories indicating presence/absence, or severity of symptoms/problems.	Frequency of item responses (summed and converted to percentage distribution) by response category.	None hypothesized.	National Center for Health Statistics (1971b)

DESCRIPTIVE STATISTICS

Estimates of central tendency and variabilty for children's mental health or behavior problem measures varied as a function of the purpose of the instruments (i.e., screening or normative assessment) and of the basis for determining appropriate cutting points (i.e., empirical vs. nonempirical). Thus, drawing conclusions about population prevalence from published data was difficult because of variations in purpose, item content, age ranges of children studied, and scoring algorithms used to select for potential disorder or deviance across measures.

Two studies of general population samples of children reported descriptive statistics for overall measures. Rutter, Tizard, and Whitmore (1970) found that a screening score of 13 or more on their Psychiatric Disorder Index indicated that 6 percent of children 10 and 11 years old on the Isle of Wight could have a clinically significant psychiatric disorder (i.e., abnormalities of behavior, emotions, or relationships that were sufficiently marked to be causing a persistent handicap in the child and/or distress in the community). These children were given a more intensive psychiatric evaluation. Estimates of behavioral deviance based on the Behavior Deviance Index (Shepherd, Oppenheim, and Mitchell, 1971) showed that about 2 percent of boys and about 3 percent of girls summed over the 5-15 age range had deviance scores of 7 or more reported for them. However, because the Index was a normative assessment instrument, it is not clear what those (or lower) scores might have indicated.

As with prevalence estimates based on measures of overall mental health, those for specific constructs were not readily comparable. Lapouse, Monk, and Street (1964) reported that based on their Fears and Worries Scale, 43 percent of children aged 6 to 12 had seven or more fears and worries. For their Personal Behavior Area and Adjustment Scales, these same investigators arbitrarily defined "deviant" scores as those occurring in the upper 25 percent of the distribution.

The National Health Examination Survey (NCHS, 1971b) reported descriptive statistics (in the form of percentages) for single-item measures. Prevalence estimates of behavior problems varied considerably across items, depending on the item content and available response categories (e.g., almost 26 percent of the children were reported to have had a disturbing experience and less than 1 percent were reported to sleepwalk frequently) (see Table 17). The NCHS (1974) reported that one half of children aged 12-17 are not nervous at all, whereas 4 percent are very nervous. Five percent of youths were reported to have wet the bed at least once during the year preceding their examination. Descriptive statistics were not reported by Rutter, Tizard, and Whitmore (1970) for their Neurotic or Antisocial subscales; nor were descriptive statistics reported for Achenbach's normal samples at each age and sex on the various behavior problem scales completed for standardization purposes.

RELIABILITY

Two methods are generally used to estimate the reliability of mental health measures: internal-consistency and test-retest. The internal-consistency approach is based on analysis of associations among items in the same scale with the assumption that items are properly grouped in terms of common variance. Test-retest

Table 17

FREQUENCY DISTRIBUTION FOR MENTAL HEALTH ITEMS, AGES 6-11

National Health Examination Survey (1971b)

Item/Response Choices	Percent Across Ages 6-11
Frequency of Unpleasant Dreams	
Frequently	1.8
Not often	41.8
Never	52.1
Unknown	4.3
Frequency of Sleepwalking	
Frequently	0.7
Not often	9.0
Never	89.3
Unknown	1.0
Trouble Getting Child to Bed	
Trouble	22.1
No trouble	77.3
Unknown	0.6
Trouble Getting Child to Sleep	
Trouble	12.2
No trouble	87.1
Unknown	0.7
Trouble Getting Child To Take a Nap When Little	
Trouble	12.4
No trouble	85.7
Unknown	1.9
Amount of Food Eaten	
Eats too much	10.4
Usually eats enough	74.2
Does not eat enough	14.3
Unknown	1.0
Fussiness Over Food	
Eats nearly all kinds	44.2
Dislikes only a few kinds	31.8
Somewhat fussy about kinds	15.8
Will not eat many kinds	7.0
Unknown	1.1
Speech Problems	
Stammered or stuttered	2.0
Lisped	1.2
Hard to understand	2.7
Other	1.9
More than one	0.0
Type unknown	0.6
No problem	91.3
Unknown	0.4

[continued]

Table 17—continued

Item/Response Choices	Percent Across Ages 6-11
Fear of Dark	
Afraid	23.3
Not afraid	74.2
Unknown	2.5
Disturbing Experience	
No	73.7
Yes	25.7
Unknown	0.6
Ran Away from Home	
Never	97.8
Once	1.5
Twice	0.2
Three times or more	0.1
Number unknown	0.0
Unknown	0.3
Frequency of Thumbsucking	
Almost every day	5.6
Once in a while	3.8
Frequency unknown	0.5
Does not suck thumb	89.7
Unknown	0.3
Frequency of Bed-wetting Reported	
Several times a week	5.2
Several times a month	4.6
About once a month	1.6
Less often	3.7
Does not wet bed	84.4
Unknown	0.2
Degree of Tension or Nervousness	
Rather high strung	17.1
Moderately tense	27.5
Moderately relaxed	45.8
Unusually calm and relaxed	8.8
Unknown	0.8
Degree of Temper	
Frequent strong temper	17.3
Occasional strong temper	33.3
Mildly angry once in a while	36.0
Hardly ever angry	12.8
Unknown	0.4

estimates are based on correlations between scores on the same scale administered at two times (with the assumption that there is no change during the time interval in the characteristic being measured).

The literature review indicated that, despite relatively frequent use of the mental health measures reviewed here, internal-consistency and test-retest reliability estimates have not been reported routinely. Internal-consistency reliability estimates for the screening measure of Langner, Gersten, McCarthy, et al. (1976) were in the moderate range (0.76); however, based on 35 items, they were not as high as might be desired. This was due, in part, to the factor analytic scaling techniques and the criteria used to select items (i.e., five high loading items from each of seven scales [factors] were selected from a much larger item pool and were combined across factors to create a 35-item scale). Internal-consistency reliability estimates for the Psychiatric Disorder Index (Rutter, Tizard, and Whitmore, 1970) and the Behavior Deviance Index (Shepherd, Mitchell, and Oppenheim, 1971) were not identified in the literature. Estimates of reliability for overall measures based on the test-retest method have been reported for the Psychiatric Disorder Index. This coefficient was in the moderate range ($r = 0.74$), based on a 2-month period between administrations. Inter-rater reliability (between mothers and fathers) for the Psychiatric Disorder Index was in the low-to-moderate range ($r = 0.63$). No test-retest reliability estimates were reported for the Behavior Disorder Index.

Internal-consistency and test-retest reliability estimates for construct-specific measures of mental health were not reported in the literature either. However, for the CBCL, Achenbach (1978; Achenbach and Edelbrock, 1979) reported both test-retest and inter-rater (parent) reliability estimates for their 10-12 scales (factors) for each age group and sex. Coefficients between time 1 and time 2 (about 7 days) ranged from 0.72 to 0.97 for boys aged 6-11, and the mean coefficient was 0.82 for boys 12-16, 0.88 for girls 6-11, and 0.90 for girls 12-16 across all scales. Inter-rater reliability ranged from 0.58 to 0.87 for boys aged 6-11, and the mean coefficient was 0.79 for boys 12-16, 0.63 for girls 6-11, and 0.54 for girls 12-16 across all scales. In general, those overall measures and construct-specific mental health measures that were tested were sufficiently reliable for use in making group comparison (according to the 0.50 standard suggested by Helmstadter, 1964).

VALIDITY

The following kinds of information relevant to the validity of mental health measures have been reported in the children's literature: (1) associations between presumed measures of different mental health constructs, (2) associations between proxy and professional (e.g., psychiatrist's) assessments of the child's mental health, (3) differences among mental health scores for members of different populations (e.g., normal versus clinic-referred populations), and (4) associations between mental health and measures of other health status components (e.g., physical or social health). In most instances, the information described above was not reported explicitly for the purpose of demonstrating validity. Thus, the methodological details necessary to make inferences about validity were often incomplete (e.g., individual scale reliability estimates were not usually published) and presentations of results were sometimes difficult to interpret with validity in mind.

Some investigators have included certain socioeconomic and demographic variables in using the construct approach to measurement validation. For example, income and social class have been studied in relation to mental health measures for adults on the assumption that people who are economically more advantaged and of higher status enjoy better mental health. Although the notion that socioeconomic status and demographic characteristics can serve as validity variables for purposes of validating mental health measures seems plausible for adults and possibly for children, the authors of this report prefer a more conservative stance; namely, factors that serve as validity variables for children's mental health measures should be clearly and unambiguously related to mental health. Because no such validity findings are well established with respect to children's mental health, this review concentrates on variables for which theory is less equivocal (e.g., other mental health measures, psychiatrist's ratings). The argument made here is that socioeconomic and demographic variables will be useful as validity variables only after their associations with children's mental health have been specified more clearly.

Validity Hypotheses

If the measures reviewed here are valid indicators of mental health, the following general patterns of results would be hypothesized: (1) strong associations (i.e., r's ≥ 0.60) among parental ratings of different mental health constructs, (2) substantial associations (i.e., r's ≥ 0.40) between parental and professional assessments of mental health, (3) significant (i.e., $p < .05$) differences between scores on mental health measures for members of psychiatric and normal populations, and, (4) statistically significant associations (i.e., $p < .05$) between mental health measures and measures of physical or social health status components.[a]

Construct Validity Findings

Table 18 summarizes published findings pertinent to the construct validity of the mental health measures discussed here. To facilitate interpretation of results, signs associated with coefficients were adjusted (when necessary) to indicate the direction of the relationship that would have been observed if high scores had always been assigned to responses consistent with the name of each measure. For example, a high score on a measure of "psychiatric disorder" would indicate greater impairment.

Associations Involving Overall Mental Health Constructs

Associations relevant to construct validity have been reported for the three overall measures reviewed. Although no associations between different overall mental health measures were identified, all associations between the overall measures completed by parents (proxies) presented in the first section of Table 18 and mental health ratings by others were in the hypothesized direction. With the exception of the correlation between the Psychiatric Disorder Index and teachers' ratings of psychiatric disorder, the relationships tended to be substantial in magnitude. That association, although statistically significant, was low and the overlap between the groups selected for further evaluation based on the two screening scales was quite small. Thus, to a large extent, teachers and the parents' scales selected different children as having a potential psychiatric disorder. Rutter, Tizard, and Whitmore's (1970) Psychiatric Disorder Index has also been shown to differentiate normal from psychiatric (i.e., clinic-attending) populations, and normal from physically impaired populations. The relationship between the Psychiatric Screening Inventory Score derived by Langner, Gersten, McCarthy, et al. (1976) and their Psychiatric Impairment Rating ($r = 0.69$), while substantial, is probably inflated because psychiatrists rated children on the basis of the parents' questionnaire responses instead of on their own independent ratings.

One overall measure—Shepherd, Oppenheim, and Mitchell's (1971) Behavior Deviance Index—and a measure of physical health were also associated in the hypothesized direction. Children with total deviance scores of four or more were overrepresented in the groups of children with some degree of health problem relative to those in the "healthy" group. In addition, the group of children with "major" disabilities or a history of serious illness had a greater proportion of high deviance scores (i.e., more than 4 items) than the group with only minor disorders.

Associations Involving Construct-Specific Mental Health Measures

The second major section of Table 18 summarizes published results relevant to the validity of construct-specific mental health scales. Correlations involving specific measures were useful in addressing the issue of whether the scales measure mental health; however, little evidence was identified that would be helpful in determining whether each scale actually measures the specific mental health construct it was intended to measure. Also, as was the case for overall measures, comparisons across studies and between different construct-specific scales were rarely possible because of differences in population characteristics and validity criteria.

Most validity coefficients for construct-specific measures were low to moderate in magnitude (i.e., less than 0.40). Lapouse (1965) reported that the correlation between her Personal Behavior Area Index and her Adjustment Scale was moderate ($r = 0.33$), suggesting that children with adjustment problems tended to have personal behavior problems also. Rutter, Tizard, and Whitmore (1970) reported fairly high percentages of agreement between children defined as neurotic or antisocial on their subscales and a final clinical psychiatric diagnosis of the same population. However, unlike Shepherd, Oppenheim, and Mitchell's (1971) overall index, Rutter, Tizard, and Whitmore's (1970) Neurotic and Antisocial Disorder subscales did not differentiate physically impaired children from nonimpaired children on the Isle of Wight.

Problem Behavior Inventories

The only construct validity data reported for the CBCL scales were related to group differences. Achenbach (1978; Achenbach and Edelbrock, 1979) found that all CBCL scales for each age group and both sexes differentiated normal children from those being evaluated at community mental health clinics. In all cases, higher scores were observed for children at community mental health clinics, suggesting that they had more behavior problems.

Table 18

SUMMARY OF CONSTRUCT VALIDITY EVIDENCE FOR MENTAL HEALTH MEASURES

		Measures of Association[a]				
Mental Health Measure	Validity Variables	Direction	Statistic	Method	Sample Characteristics	Investigator(s)
			OVERALL MEASURES			
Mental Health Ratings by Others						
Psychiatric Disorder Index	Teacher ratings of psychiatric disorder	+	0.18^{*}	r	Children aged 10 and 11 living on the Isle of Wight (N=2100)	Rutter, Tizard, Whitmore (1970)
Psychiatric Screening Inventory	Psychiatric impairement rating (based on psychiatrist's review of household interview data)	+	0.69^{+}	r	Random sample of children aged 6-18 (N=1034)	Langner, Gersten, McCarthy, et al., (1976)
Psychiatric Screening Inventory	Direct psychiatric exam rating (based on psychiatrist's interview with child)	+	0.33^{+}	r	Subsample from random sample of children aged 6-18 (N=271)	Langner, Gersten, McCarthy, et al., (1976)
Psychiatric Screening Inventory	Treatment referral status (referred for treatment prior to household interview)	+	0.49^{+}	r	Subsample from random sample of children aged 6-18 (N=387)	Langner, Gersten, McCarthy, et al., (1976)
Group Differences						
Psychiatric Disorder Index	Children attending psychiatric clinics vs. children in the general population	NA	For boys, 71% show psychiatric disorder vs. 15% in general population. For girls, 67% vs. 8%	Percent disordered (score of 13+)	Children aged 10 and 11 in the general population (N=198) and attending psychiatric clinics (N=120)	Rutter, Tizard, Whitmore (1970)
Psychiatric Disorder Index	Children diagnosed as showing psychiatric disorder vs. children in the general population	NA	55% vs. 6%	Percent disordered (score of 13+)	Children aged 10 and 11 in the general population (N=2071) and subsequently diagnosed as psychiatrically disordered (N=118)	Rutter, Tizard, Whitmore (1970)
Psychiatric Disorder Index	Physically disordered children vs. children in the general population	NA	13% vs. 7%	Percent disordered (score of 13+)	Children aged 10 and 11 in the general population (N=1940) and children defined as physically disordered on the basis of a screening examination (N=158)	Rutter, Tizard, Whitmore (1970)
Associations with Physical Health Measures						
Behavior Deviance Index (4 or more)	Physical disorder	+	Not given^{+}	χ^2	Girls and boys aged 5-15 (N=6210)	Shepherd, Oppenheim, Mitchell (1971)

Mental Health Measure	Validity Variables	Measures of Association[a]			Sample Characteristics	Investigator(s)
		Direction	Statistic	Method		
CONSTRUCT-SPECIFIC MEASURES						
Associations Between Mental Health Measures						
Personal Behavior Area Scale	Adjustment Scale	+ +	$0.34^{\dagger}$ Not given†	r χ^2	Representative sample of children aged 6-12 (N=477)	Lapouse (1965)
Mental Health Ratings by Others						
Neurotic Disorder Subscale	Clinical diagnosis (neurotic)	NA	80%	Percent agreement	New referrals of children to a psychiatric clinic (N=28)	Rutter, Tizard, Whitmore (1970)
Antisocial Disorder Subscale	Clinical diagnosis (antisocial)	NA	80%	Percent agreement	New referrals of children to a psychiatric clinic (N=47)	Rutter, Tizard, Whitmore (1970)
Neurotic Disorder Subscale	Psychiatric diagnosis	NA	78%	Percent agreement	Children aged 10 and 11 defined as neurotic on the basis of a screening exam (N=27)	Rutter, Tizard, Whitmore (1970)
Antisocial Disorder Subscale	Psychiatric diagnosis	NA	78%	Percent agreement	Children aged 10 and 11 defined as antisocial on the basis of a screening exam (N=18)	Rutter, Tizard, Whitmore (1970)
Group Differences						
Neurotic Disorder	Physically disordered children vs. children in the general population	NA	6% vs. 3%	Percent disordered	Children aged 10 and 11 defined as physically disordered on the basis of a screening exam (N=158) and normal children (N=1940)	Rutter, Tizard, Whitmore (1970)
Antisocial Disorder	Physically disordered children vs. children in the general population	NA	5% vs. 3%	Percent disordered	Children aged 10 and 11 defined as physically disordered on the basis of a screening exam (N=158) and normal children (N=1940)	Rutter, Tizard, Whitmore (1970)
PROBLEM BEHAVIOR INVENTORIES						
Group Differences						
Behavior Problems Scales (all 9)	Mental Health Clinic referred children vs. normal children	+	Values range from 43 to 408†	F	Normal and Mental Health Clinic referred children aged 6-16 (N=600)	Achenbach (1978); Achenbach and Edelbrock (1979)

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[a] Guide to abbreviations used in these columns:

χ^2 = chi-square statistic
r = product-moment correlation coefficient
% = percent of sample
FA = not appropriate
F = F-statistic
* = significant at $p < 0.05$
† = significant at $p < 0.01$

Summary of Empirical Studies

These reliability and construct validity findings suggest that overall, construct-specific, and problem behavior inventory measures for which data are available do appear to meet minimum reliability standards for group comparisons; they also seem to tap aspects of mental health as defined in the respective studies. However, the information and empirical evidence generally available from published reports were not sufficient to assess comprehensively the reliability and validity of the children's mental health measures reviewed. For instance, not one overall, construct-specific, or problem behavior inventory measure reported complete information with respect to descriptive statistics for measures, reliability estimates (e.g., both internal-consistency and test-retest estimates), and construct validity estimates (e.g., convergent and discriminant validity). Little evidence was identified that would be helpful in determining whether each scale measures the specific mental health construct it was intended to measure (i.e., its discriminant validity). Also, the important issue of whether behavioral or psychological definitions of mental health for children discriminate best has not been addressed because items based on each definition have not been fielded in the same study. Perhaps the HIS can contribute to the resolution of this issue, since both behavioral and psychological/feeling-state items are presently included in the fielded mental health battery. In any case, data on which to base judgments of the adequacy of mental health measures for children were generally meager or unavailable.

Mental Health and Demographic and Socioeconomic Characteristics

Associations between mental health scale scores and age, sex, and race are not considered relevant to the validity of mental health measures reviewed here, because theory regarding these associations is not well developed. Literature findings regarding these associations are summarized below.

Age. Associations between overall mental health scale scores and age were not reported. Of the relationships between age and construct-specific measures reported by Lapouse (1965), there appeared to be greater deviant personal behavior in the younger age group (6-8 years old) than in the older age group (9-12 years old). No differences in age distribution were found in Adjustment Scale scores or in the number of fears and worries reported for younger versus older age groups. Studies based on the CBCL (Achenbach, 1978; Achenbach and Edelbrock, 1979) showed that younger children within an age group (e.g., 12-16 years old) tended to obtain higher scores than older children on the Immature, Obsessive-Compulsive, Hostile Withdrawal, and Aggressive Scales for boys (aged 12-16) and on the Schizoid Scale for boys (aged 6-11). Similar tendencies were observed on the Aggressive, Immature Hyperactive, and Cruel Scales of girls 12-16 years old. For girls 6-11 years old, the only age effect was the tendency of older girls within that age range to obtain higher scores than younger girls on the Social Withdrawal Scale.

Reports regarding single-item behavior problems from the National Health Examination Survey (NCHS, 1971b; 1974) indicated a general trend toward decreasing problems with age (e.g., speech problems, thumbsucking, bedwetting, and fear of the dark). No consistent age differences were found for behavior ratings, such as amount of tension, nervousness, or temper control.

Sex. Sex differences among mental health measures were mixed. Rutter, Tizard, and Whitmore (1970) found that the proportion of boys defined as psychiatrically disordered exceeded the proportion of girls so defined. It also appeared that a greater proportion of boys exhibited antisocial problems, whereas more girls exhibited neurotic disorders than boys. Situation-specific phobias (i.e., specific fears) were equally frequent among boys and girls. On the other hand, Lapouse and Monk (1959) reported significantly more fears and worries for girls than boys. No significant sex differences were found in Personal Behavior Area Index and Adjustment Scale score distributions (Lapouse, 1965), nor in the distribution of Behavior Deviance Index scores reported by Shepherd, Oppenheim, and Mitchell (1971).

For single-item behavior problems reported in the National Health Examination Survey (NCHS, 1971b; 1974), boys were more likely to have speech and bedwetting problems and to be rated as having a strong temper. Girls were more likely to be afraid of being left alone and to have fears of the dark. Girls were also more likely to persist in thumbsucking than boys. The proportion of youths aged 12-17 rated by nervousness varied little by sex.

Race. Lapouse and Monk (1959) reported that black children showed a larger number of fears and worries than white children. The same survey (Lapouse, 1965) also found that greater deviation in adjustment occurred among black children than white children. This finding persisted even when statistical controls for social class were made. Findings from the National Health Examination Survey (NCHS, 1975b) suggest that black youths aged 12-17 tend to be less tense than white youths, whereas white youths are reported to wet the bed less often than black youths.

Income. The National Health Examination Survey (NCHS, 1975b) reported that the percentage of youths aged 12-17 who wet the bed was lower for higher income groups.

G. Defining Social Health

Social health has been conceptualized as a component of health status distinct from physical or mental health. For adults, measurement of social health focuses on the individual and is defined in terms of interpersonal interactions (e.g., visits with friends) and social participation (e.g., memberships in clubs). Both objective and subjective constructs (e.g., number of friends and a rating of how well one is getting along, respectively) are included in this definition. For children, social health has only rarely been distinguished as a separate health component or measured independently of mental health or behavior problems in child behavior checklists. When it has been measured separately, social health has been defined in terms of ability to get along with others, quality of interpersonal interactions, and quantity of participation in social events or activities.

H. Approaches to Measurement of Social Health

Two investigations specifically constructed social health measures in terms of social relations and participation. The National Health Examination Survey (NCHS, 1971b) contained several individual items pertaining to social relations and social activities of children aged 6-11, and one item pertaining to the child's ease in making friends for children aged 12-17 (NCHS, 1974). Achenbach (1978; Achenbach and Edelbrock, 1979) developed two multi-item measures that were aggregated to form social (health) scales indicative of social competency for children aged 6-11 and 12-16. Items pertaining to social health (according to HIS definitions) have been included in many mental health or behavioral problem measures for children. These were identified and discussed in the mental health literature review presented previously.

CONTENT OF MEASURES

Social Relations

The National Health Examination Survey (NCHS, 1971b) included several individual items designed to elicit parents' ratings of the behavioral patterns of their children (6-11 years). One set of items, labeled "peer relations," appeared to assess behavioral patterns indicative of the child's social health. Peer relations were defined in terms of the degree of social or other skill development of children. Items pertained to the number and age of the child's friends, willingness to make new friends, and the ability of the child to get along with other children (see Table 19). There was no attempt to aggregate the separate items to develop a peer or social relations scale. For youths aged 12-17 (NCHS, 1974), one item designed to measure the youth's ease in making friends was also included.

Achenbach (1978; Achenbach and Edelbrock, 1979) reported data on two social competence scales for boys and girls, aged 6-11 and 12-16, as part of their attempt to develop a descriptive classification system of children's behavior disorders. The social competence scales were designed to reflect adaptive competencies, including children's social relations. For this purpose, the Social Scale included items regarding the number of close friends the child has, the times per week the child does things with his or her friends, how well the child plays and works by himself or herself (to index independent behavior), and the number of organizations of which the child is a member and the amount of participation in them. The first three items are most closely connected with social relations. Responses to individual items were based on frequency (e.g., number of friends) or were norm-referenced (e.g., "above average" participation) and were assigned 0, 1, or 2 points. A Social Scale score was constructed by summing points across scale items.

Social Activities

Two other groups of individual items termed "organized activity" and "use of time" by the National Health Examination Survey also appeared to reflect aspects of social health. Items in those categories referred to special lessons or classes, memberships in clubs or groups, and the amount of time children spent on a usual day watching television, reading newspapers, playing with friends, chores, and a variety of other activities. They were primarily objective measures and, again, were scored separately, with no attempt to develop a composite scale or score (NCHS, 1971b).

Achenbach's (1978) Activities Scale can also be included as a measure of social health. The Activities Scale contains information about the number of sports in which the child engages, the amount of time spent in sports relative to other

Table 19

SINGLE-ITEM AND MULTI-ITEM MEASURES OF SOCIAL HEALTH CONSTRUCTS

Scale/Construct	Number of Items	Item Content	Scaling and/or Scoring Method	Investigator(s)
Activities	4	Items covering the amount and quality of participation in sports, hobbies, activities and games, jobs, and chores	Weights assigned and summed	Achenbach (1978)
Social	3	Items dealing with membership and participation in organizations, number of friends and contacts with them, behavior with others and alone	Weights assigned and summed	Achenbach (1978)
Social and Peer Relations	4	Single items dealing with the number of friends and playmates the child has; whether friends are older, same age, or younger; child's willingness/ease in making new friends; and how well child gets along with other children	Responses by category summed and converted to percentage	National Health Examination Survey (1971b, 1974)
Activities	12	Single items including does child belong to any clubs or group activities; amount of time spent at various leisure activities (e.g., watching TV, reading, playing with friends)	Responses by category summed and converted to percentage	National Health Examination Survey (1971b)

children, the number of activities in which he or she participates, an evaluation of the quality of that participation, the number of chores or jobs the child performs, and the quality of job or chore performance. These six items are assigned points on the basis of frequency and quality of participation, and the points are summed across items to obtain an Activities Scale score. However, scaling assumptions and the internal consistency of item groupings were not tested empirically for either the Social Scale or the Activities Scale.

DISCUSSION

Conceptually, social health has not been distinguished from physical and mental health constructs for children. Most often, it has been included as one aspect of behavioral problems found in comprehensive checklists (see Section E above). Although the items and scales reviewed were not labeled as social health measures, they appear to assess social health constructs as defined for adults (i.e., measures pertaining to interpersonal interactions and social participation) (see Donald, Ware, Brook, et al., 1978). However, the possible confounding of social concepts with those of mental health, and the implications of doing so, were not discussed by the investigators who were reviewed.

Areas in which social interaction and participation are manifested were family and home, social life (e.g., friendships), community (e.g., clubs), and other activities (e.g., hobbies, interests). Measures focused on behavior in one specific area or across several areas.

Both evaluative data (e.g., evaluations of the child's behavior by parents) and relatively objective data (e.g., counts of the number of friends) were combined to construct social health measures. Only Achenbach attempted to aggregate his measures, but he did not relate social competence scales to his Child Behavior Checklist (CBCL) scales.

I. Empirical Studies of Social Health Measures

DESCRIPTIVE STATISTICS

Only one study reported frequency distributions for child social health items. The National Health Examination Survey (NCHS, 1971b) presented the percentages of children aged 6-11 rated by parents on the "peer relations" questions (see Table 20) and the percentages of youths aged 12-17 rated by parents on the ease in making friends (NCHS, 1974). Trends in Table 20 suggest that most parents view their children as socially active. All children were viewed as having at least some friends; very few (about 4 percent) had difficulty getting along with other children; and less than one-fourth were rated as somewhat shy. Similarly, most youths (82 percent) were reported as making friends easily, with only 1 percent reported as having a lot of trouble making friends.

Table 20

FREQUENCY DISTRIBUTIONS FOR SOCIAL HEALTH ITEMS, AGES 6-11
National Health Examination Survey (1971b)

Item/Response Choices	Percent Across Ages 6-11
Number of [Child's] Friends	
None	0.0
Only a few	37.4
A good number	46.4
Many children	15.2
Unknown	1.1
Are Friends Mostly--	
Older	7.5
About same age	84.3
Younger	3.4
Combination	4.1
Unknown	0.7
Willingness To Meet New Children and Make New Friends	
Somewhat shy	21.8
About average willingness	34.2
Very out-going--makes friends easily	43.3
Unknown	0.7
How Well Does Child Get Along with Other Children	
No difficulty	45.9
Liked as well as most children	49.2
Has difficulty with many children	4.2
Unknown	0.6

RELIABILITY

Only one of the two investigators who measured social health separately reported estimates of reliability. Achenbach (1978; Achenbach and Edelbrock, 1979) reported both test-retest and inter-rater reliability estimates for the social competence scales. Mothers of 12 boys aged 6-11, selected from a general population, completed the child behavior checklist on two occasions about 8 days apart. A test-retest reliability coefficient of 0.72 for the Activities Scale was reported. Actual test-retest coefficients were not reported for the Social Scale, although they were reported as falling somewhere in the range of 0.72 to 0.97. Test-retest coefficients for boys aged 12-16 and girls aged 6-11 and 12-16 were very similar. Inter-rater reliability was estimated by asking the mothers and fathers of 16 to 37 boys and girls (at each age range) who attended a mental health clinic to complete the questionnaire independently. A moderate coefficient of 0.58 for the boys' (6-11) Activities Scale was reported. Reliability coefficients for the other age groups were in that range. Both types of reliability findings suggest that these measures are appropriate for purposes of large group comparisons. However, if interparent reliability for the Activities Scale is only 0.58, there is reason to question whether one parent or both should be used as a source of social health data. From a validity point of view, because parents are not in close agreement, one is likely to be a better rater. Thus, studies are needed to determine which parent provides the most valid ratings.

VALIDITY

Neither investigator explicitly studied the construct validity of the social health measures, but both reported information relevant to this type of validity. This information pertained to (1) associations among measures of social (relations) health, (2) associations between measures of social health and other health measures, and (3) differences among social health scores for members of different populations (i.e., normal versus mental-health-clinic-referred populations). Associations among measures of social health should be significant and positive, reflecting an underlying construct common to the different operational definitions used. Associations between measures of social health and other health measures should be significant, reflecting a general health construct underlying all components of health status. Although not as clear cut as the previous hypotheses, there should be significant differences ($p < .05$) among scores on social health measures for children from psychiatric and normal populations.[3]

The National Health Examination Survey (NCHS, 1972) provided data relevant to the first hypothesis (i.e., construct validity of selected social health items). Significant associations were found among some social health measures. The number of friends was positively related to willingness to make new friends and the ability to get along with others ($p < .01$). Involvement in art activities was positively related to involvement in scouting groups ($p < .01$, for girls only) (see Table 21). The National Health Examination Survey (NCHS, 1974) provided data relevant to the second hypothesis. For youths aged 12-17, the difficulty the youth had in making friends was found to be significantly related to degree of nervousness. Achenbach (1978; Achenbach and Edelbrock, 1979) provided data on the discriminant validity of the social competence scales. Comparisons of the scores for the Social and Activities Scales for general population children versus clinic-referral children (boys and girls being evaluated in mental health settings) indicated that both scales differentiated between groups. Thus, clinic children had significantly less favorable scores than nonclinic children ($p < .001$) at each age level (6-11 and 12-16) and for both sexes. Associations between the Activities and Social Scales, or among the two social competence scales and the Child Behavior Checklist profile scores, were not reported for clinic or nonclinic samples or across samples.

Summary of Empirical Studies

Of the few specifically social health measures for children identified, most are single items measuring either social relations, number of friendships, or quantity of social activities (see NCHS, 1971b; 1974). The two multi-item measures developed by Achenbach did not test the assumptions underlying scale construction, nor were internal-consistency reliability estimates reported for either his Social or Activities Scales. Test-retest and inter-rater (parent) reliability estimates met minimum standards, but, for the Activities Scale, the latter was low enough (0.58) to make its potential validity suspect, and all reliability estimates for these scales were based on very small samples (less than 20 per test). Construct validity was not specifically

Table 21

SUMMARY OF VALIDITY EVIDENCE FOR SOCIAL HEALTH MEASURES

Social Health Measure	Validity Variables	Measures of Association[a] Direction	Statistic	Method	Sample Characteristics	Investigator(s)
Group Differences						
Social Scale	Mental-health-clinic-referred children vs. normal children	+	Not given†	F	Normal and clinic-referred children aged 6-16 (N=1250)	Achenbach (1978); Achenbach and Edelbrock (1979)
Activity Scale	Mental-health-clinic-referred children vs. normal children	+	Not given†	F		
Associations with Mental Health Measures						
Getting along with others	Degree of temper	-	9.0	χ^2	Girls and boys aged 6-11 (N=7119)	NCHS (1972)
Getting along with others	Degree of tension or nervousness	-	Not given	χ^2	Girls and boys aged 6-11 (N=7119)	NCHS (1972)
Associations Among Social Health Measures						
Number of friends	Willingness to make new friends	+	20.7†	χ^2	Girls and boys aged 6-11 (N=7119)	NCHS (1972)
	Getting along with others	+	Not given†	χ^2		
Willingness to make new friends	Getting along with others	+	NS	χ^2	Girls and boys aged 6-11 (N=7119)	NCHS (1972)
Involvement in different types of activities	Involvement in art/scout groups	+	.19	r	Girls and boys aged 6-11 (N=7119)	NCHS (1972)
	Involvement in religious groups	+	.12	r		
	Involvement in athletics	+	.10	r		
Involvement in art activities	Involvement in Scouting groups	+	14.0† (girls) 1.4 (boys)	χ^2	Girls and boys aged 6-11 (N=7119)	NCHS (1972)

[a] Guide to abbreviations used in these columns:

χ^2 = chi-square statistic
r = product-moment correlation coefficient
F = F-statistic

NS = not significant
* = significant at $p < 0.05$
† = significant at $p < 0.01$

tested for any measures; however, Achenbach's Social and Activities Scales did discriminate clinic from nonclinic children. Certainly more reliability and validity studies are needed before these scales could be considered for use in general populations.

Relationship of Social Health Measures to Sociodemographic Variables

Associations among scores for social health measures and age, sex, race, and income are summarized here for information purposes only. They should not be considered evidence of validity, because theory regarding these relationships is not well formulated.

Age. Achenbach (1978; Achenbach and Edelbrock, 1979) reported that age differences were not significant for either boys or girls in either age group on the Activities Scale or the Social Scale, with one exception: in the age range of 6-12 years, higher scores were observed on the Social Scale for boys aged 9-12 than for those aged 6-8 ($p < .05$).

The National Health Examination Survey (NCHS, 1971b; 1974) reported age trends for its social relations items. The proportion of children reported as having only a few friends decreased somewhat over the age-span studied (6-11 years), whereas the proportion with many good friends increased. The proportion with mostly older friends decreased with age from about 10 percent at ages 6-7 to 4 percent among 11-year-olds. Correspondingly, the proportion with friends their own age increased with age from 81 percent at 6-7 years to 87 percent at 11 years. For youths aged 12-17, there was no age trend related to "trouble making friends."

Shyness appeared to decrease with age from 24 percent among 6-year-olds to 20 percent among those aged 10 and 11 years. No age trend was seen for the proportion of children said to be very outgoing and to make new friends easily.

The proportion of children having no difficulty getting along with others tended to increase with age, and the proportion of those "liked as well as most children" tended to decrease with age. No age-related trend was apparent in children reported to have difficulty getting along with many children.

In terms of group activities, the proportion of children participating increased sharply from about 16 percent among 6-year-olds to about 58 percent at age 11.

Sex. Few consistent sex differences were found among the peer relations items reported by the National Health Examination Survey (NCHS, 1971b). For example, slightly more girls (23 percent) than boys (20 percent) were reported to be somewhat shy. Boys (36 percent) were somewhat more likely to be rated average in willingness to meet new children and make new friends than were girls (33 percent). No sex differences were reported for the items relating to number of friends, age of friends, and ability to make friends easily (see NCHS, 1971b, 1974).

Race. There appeared to be no difference between white and black youths (aged 12-17) in their ability to make friends easily (NCHS, 1975b).

Income. No differences were reported in the ability of youths aged 12-17 to make friends as a function of family income (NCHS, 1975b).

J. Defining General Health Ratings

This section summarizes literature pertaining to the conceptualization and measurement of overall health for children, based on parental ratings of the child's general health status. Examples of these measures of health status (often referred to as general health perceptions) include the single-item rating of health in terms of "excellent," "good," "fair," or "poor" and endorsement or nonendorsement of statements regarding worry or concern about the child's health. General health ratings tend to be more subjective than those discussed thus far because they require higher degrees of inference or are based on behavior that cannot be directly observed. For adults, general health ratings appear to add useful information about health to that obtained from relatively objective measures (Ware, Davies-Avery, and Donald, 1978). Whether this holds true for children is not known.

K. Approaches to Measurement of General Health Status

Findings regarding general health ratings were based on data from two general population surveys (NCHS, 1973; Roghmann and Pless, 1975). In each survey, analyses were based entirely on single-item measures.

The content of items used to obtain general health ratings was similar in both the National Health Examination Survey (NCHS, 1973) and the Rochester Child Health Survey (Roghmann and Pless, 1975). Both surveys requested a parent to choose from a number of response categories the one that best described the child's health. In the National Health Examination Survey, the health of children (aged 6-11) was rated on a four-point scale (very good, good, fair, or poor), whereas the health of youths (aged 12-17) was rated on a five-point scale (excellent, very good, good, fair, or poor). Ratings were made in terms of the child's present health. Parents were also asked to rate the extent of their worry about children's health. The Rochester Child Health Survey included a single-item general health rating of children aged 0-17 that pertained to health over the last 12 months in terms of good, fair, or poor.

L. Empirical Studies of General Health Ratings

PREVALENCE

The percentage of children rated in categories of general health status, as reported in both the National Health Examination Survey (NCHS, 1973) and by Roghmann and Pless (1975), is shown in Table 22. Because the number of response categories between the age groups differed, the results are not strictly comparable. Nevertheless, it is clear that less than 10 percent of the children were rated as being in the "fair" to "poor" health categories. Thus, most children in general populations are reported to be in "good" or "excellent" health.

In the National Health Examination Survey (NCHS, 1973), parents of nearly 19 percent of the children and 15 percent of the youths expressed concern or worry about some aspect of the health of their children. Both of these figures are larger than the percentages of children and youths rated "fair" and "poor" in terms of general health status, suggesting that some parents worry about the health of their children even though it is viewed as good or excellent.

Table 22

PERCENTAGE OF CHILDREN RATED IN CATEGORIES
OF GENERAL HEALTH STATUS

	(NCHS, 1973)		Roghmann and Pless (1975)
Category	Ages 6-11	Ages 12-17	Ages 0-17
Excellent	Not included	33.0	Not included
Very good	52.0	34.0	Not included
Good	43.0	29.0	90.0
Fair	4.9	3.0	8.0 - 9.0[a]
Poor	0.4	0.3	1.2 - 2.0

[a] Estimated by the authors of this report from available data.

RELIABILITY

Neither study reported any type of reliability estimate for the items asked.

VALIDITY

The validity of the general health ratings was not specifically studied in either investigation, although some results reported could be evaluated for this purpose. Data pertaining to four types of hypothesized relationships were identified (the magnitude relating to the hypothesis is given in parentheses): (1) between different aspects of general health ratings (strong, e.g., r's > 0.60); (2) between general health and mental health ratings (substantial, e.g., r's > 0.40); (3) between general health ratings and physical examination findings (substantial); and (4) between ratings and use of health care services (statistically significant, i.e., r's sufficient for $p < .05$).

Associations Among General Health Ratings Items

The National Health Examination Survey (NCHS, 1973) reported a significant relationship ($p < .01$) between parents' ratings of their children's present health and their ratings of health worry for both children and youths. The percentage of children and youths whose parents were worried about their health decreased with each successively higher health-rating level.

Associations Among General Health Ratings and Mental Health Items

The National Health Examination Survey (NCHS, 1974) reported a substantial relationship between parents' ratings of present health status for youths aged 12-17 and ratings of degree of nervousness. For all youths, the proportion rated as nervous ranged from around 40 percent for those in excellent health to around 80 percent for those in fair or poor health.

Associations Among General Health Ratings and Examination Findings

There appeared to be a direct relationship between parent (usually mothers) ratings and physical examination findings for children (aged 6-11) in the National Health Examination Survey (NCHS, 1973). Examination revealed that children rated in "poor" or "fair" health were most likely to have a significant physical abnormality ($p < .01$); this finding was also true in the case of parental worry and physical examination results. However, in spite of this general relationship, there was not complete agreement between parental ratings and examination findings. For example, physical examination showed that among children aged 6-11 whose health was rated "fair" or "poor," only 20 or 40 percent, respectively, had significant health problems. Moreover, only 17 percent of those whose parents "worried" about their health were found to have a physical abnormality at the examination. It was noted that this lack of agreement may have occurred because the clinical examination identified primarily physical abnormalities (NCHS, 1973). This view lends support to the notion that health should be conceptualized as multicomponent and that each component warrants operationalization and measurement, as is done in the HIS.

Associations Among General Health Ratings and Health Care Utilization

Roghmann (1975) presented data pertaining to the use of medical care as a function of need factors (e.g., general health rating). Children rated in "poor" health were more likely to have contact with the doctor over the last 2 weeks ($p < .06$), and to have a higher use-rate of medical services over the last year ($p < .001$), than were children rated in "good" health. The last visit to the doctor was more likely to be for a preventive purpose for children in "good" health than for children in "poor" health ($p < .05$).

Summary of Validity Findings

Published findings are consistent with theory and support the validity of general health ratings as general measures of health status. Specifically, children rated as healthy tend to have fewer physical abnormalities, use fewer physician services, and less often tend to be a source of parental worry.

General Health Ratings and Demographic and Socioeconomic Characteristics

For adults, negative associations between general health ratings and age have been considered evidence of validity based on the assumption that health deteriorates with age. For children, this assumption is probably not true. Thus, relationships among age and general health ratings, and among sex, race, and income, were not evaluated as evidence of measurement validity; findings are reported here only for the purpose of providing information.

Age. No consistent trend by age was found for ratings of children's general health status (NCHS, 1973; Roghmann and Pless, 1975). In the National Health Examination Survey, the health of older children (9-11 years) was significantly more likely to be considered worrisome than that of children 8 years and under.

A similar but nonsignificant increase was apparent for youths up to 15 years old relative to older ones (16-17). On the other hand, Roghmann and Pless reported that the proportion of children with a rating of either "fair" or "poor" health tended to diminish slightly with age (from 10 percent for those under 3 years of age to 7 percent for those 12-17 years old).

Sex. Differences in ratings of general health status for boys and girls were negligible for the younger age group (6-11), but for youths (12-17), boys were more likely ($p < .05$) to be rated in "excellent" or "very good" health (NCHS, 1973). Roghmann and Pless (1975) reported that the proportion of children with a rating of "fair" or "poor" health was slightly greater for boys (9 percent) than girls (7 percent).

Race. White children and youths were more likely than blacks to be considered in at least "very good" health and less likely to be in "good" or "fair" health (NCHS, 1973). Correspondingly, parents of black children and youths were more frequently worried about the health of their children than were parents of white children. Findings reported by Roghmann and Pless (1975) were similar: 7.5 percent of the white children were rated in "fair" or "poor" health compared with more than 13 percent of the black children.

Income. The proportion of children (aged 6-11) and youths (aged 12-17) whose health was rated at least "very good" increased significantly with increasing family income level (NCHS, 1973). This same pattern was observed for the concern/worry item and income, although it was significant only among youths. In the Rochester Child Health Survey (Roghmann and Pless, 1975), there appeared to be an interaction between race and income such that poor blacks and poor whites had similarly lower health ratings, but higher income blacks reported poorer child health than higher income whites.

SUMMARY OF HEALTH STATUS LITERATURE REVIEW

The review of published literature was undertaken to clarify the state of the art of children's health status measurement and to identify major issues involved in the construction of children's health status measures. In general, measures of health status for children have not been well-developed and validated. The review of published physical, mental, and social health, and general health measures identified few investigations of children in general populations that addressed issues relevant to the reliability and validity of their measures. Findings from the literature reviews pertaining to each of the following issues are summarized here: (1) similarity and differences in the content of specific health status measures, (2) the extent to which empirical tests were reported to confirm item groupings within each health dimension and to confirm assumptions underlying scoring methods used, (3) descriptive statistics for published health status measures, (4) the reliability of published health status measures, and (5) the validity of measures in terms of the health construct they were intended to measure.

Content of Measures

The only dimensions of children's health status on which there appeared to be general consensus regarding content of measures were physical health and general health perceptions. All investigators measuring physical health used similar items to define each of the five categories of functioning: self-care activities, mobility, physical activities, role activities, and leisure activities. Similarly, both investigations measuring general health perceptions for children used single-item ratings of the child's general health in terms of excellent, good, fair, or poor.

On the other hand, there was no clear consensus on either conceptual or operational definitions of mental health for children. Mental health measures for children focused primarily on overt, tangible behaviors that mix behavioral, physical, and psychological aspects of health status. There appeared to be few measures of children's mental health that focused primarily on psychological states and dealt exclusively with mental (as opposed to physical and social) health content. Moreover, almost all measures that were identified emphasized negative behaviors and psychological states to the virtual exclusion of positive well-being or behaviors.

Similarly, there appeared to be no explicit conceptual agreement regarding the meaning or measurement of social health for children. In fact, social health has rarely been distinguished as a separate health component or measured independently of mental health or behavior problems. Although not labeled explicitly as social health measures, some items identified in the literature review had similar content to those used to assess social health constructs for adults (i.e., measures pertaining to interpersonal interactions and social participation).

Construction of Scales and Indexes

Of those investigators who developed scale or index measures of health status for children, only one reported tests of the extent to which items in each scale measured the same construct and whether assumptions underlying scoring methods were appropriate. Most often, items were aggregated within specific health dimensions without empirical justification. When summary measures were used, little mention was made of the appropriateness of combining items covering several constructs. In the case of physical health measures, there was some consensus regarding which categories of activities should be aggregated. More extensive studies of the theoretical and empirical assumptions underlying scaling schemes are needed across all the children's health status dimensions.

Descriptive Statistics and Prevalence

Summarizing and drawing conclusions about prevalence data for specific health status problems was difficult because of variations in item content, age ranges of children studied, and scoring algorithms used to define health status measures. In spite of these differences, it appears that most of the children in general populations are reported to be in good health (i.e., free of functional limitations, socially healthy, not at potential psychiatric risk, and rated in "good" or "excellent" general health). None of the investigators addressed the issue of precision of measurement. Thus it is not clear under what circumstances published measures of children's health status have sufficient power to test hypotheses regarding the effects of various treatment conditions, such as those under investigation in the HIS (e.g., different health care financing arrangements).

Reliability

Few investigators addressed issues pertaining to the reliability of their health status measures; no reliability estimates were identified for measures of physical health or general health perceptions. Estimates of reliability, when reported, were based primarily on test-retest and inter-rater methods. In addition, one group of mental health investigators reported internal-consistency reliability estimates for their screening measure. Published reliability estimates appeared to be sufficiently high for purposes of group comparisons; however, more empirical work needs to be conducted on the reliability of specific health status measures before they can be used with any confidence.

Validity

What little validity evidence was available in published studies of children's health status measures pertained primarily to construct validity (i.e., studies of the relationship between the measure of interest and the other variables with which a valid measure should be correlated). Published measures of physical functioning for children have not been well validated. Although available evidence indicates some relationship between measures of functional status and other physical health constructs, no studies of associations were reported among measures representing different categories of functional status or between measures of functioning and general health ratings or other health-related variables.

The construct validity of mental health measures has been more extensively studied than that of physical health measures; however, evidence has usually centered on the problem of determining whether the measures assess mental health rather than the specific mental health constructs they were intended to measure. Although findings tend to support published measures as valid indicators of mental health, further studies are needed to clarify the operational definitions of mental health constructs and to specify their interrelationships before the validity of the measures can be assumed with confidence.

Finally, construct validity was not specifically assessed for either the measures of social health or those of general health; nevertheless, some information relevant to this type of validity was reported. Associations among social health items were consistent with theory and thus supported their validity. Similarly, the observed pattern of associations among general health ratings and between these ratings and other measures of health status tended to support the validity of the ratings items as measures of general health. For measures of both social health and general health ratings, more reliability and validity studies are needed before the measures can be confidently used in general populations.

FOOTNOTES

1. These hypotheses were originally enumerated and tested for adults with functional limitations in the HIS by Stewart, Ware, Brook, et al. (1978).

2. These hypotheses were originally developed and assessed with measures of mental health for adults in the HIS by Ware, Johnston, Davies-Avery, et al., 1979.

3. These hypotheses were first suggested in the HIS Social Health literature review for adults (see Donald, Ware, Brook, et al., 1978).

Chapter 3

METHODOLOGY FOR MEASURING CHILD HEALTH STATUS IN THE HIS

This chapter presents details about sampling characteristics, data-gathering methods, and the batteries of questionnaire items used at the Seattle, Fitchburg, Franklin County, Charleston, and Georgetown County sites to measure children's health status before the HIS experiment began. It also discusses a plan of analysis for performing empirical studies of HIS measures of children's physical, mental, and social health, and general health perceptions that include assessment of scaling issues, descriptive statistics, reliability, validity, and sociodemographic correlates of the measures.

Sampling Characteristics and Data-Gathering Methods

HIS data on children's physical, mental, social, and general health ratings reported in this volume were derived from Form A of the Medical History Questionnaire (MHQ) administered at the time of enrollment. At that time, self-administered questionnaires specific to two age groups (0-4 and 5-13) were generally completed by the mother or some other proxy-respondent. These age groupings were formed to be consistent with the beginning of school attendance for older children. The enrollment sample differed (intentionally) from a simple random sample of the population in each site (see Chapter 1 for a detailed description of the sampling frame).

The analyses described in this report are restricted to data on 679 children aged 0-4 and 1473 children aged 5-13 from 5 of 6 sites.[1] Table 23 presents demographic and socioeconomic characteristics of children enrolled in all 6 HIS sites. As can be seen from Table 23, sample children (and families) differ across sites with respect to family income, education of the family head, and race. There are fewer whites, less-educated family heads, and more economically disadvantaged families in the South Carolina site (Charleston and Georgetown County sites combined).

Additional data on 188 children aged 0-4 and 352 children aged 5-13 from the sixth site (Dayton, Ohio) are analyzed separately because the current child health battery was not administered in that site. Dayton was the first HIS site to be enrolled, and the preliminary child health battery items administered there were generally less comprehensive than those administered in the other 5 sites.

In addition to the Medical History Questionnaire items described above, there are several other sources of data for children enrolled in the HIS. These sources will be used in future validity studies and include enrollment and exit physical examinations of children; biweekly health diary information on families, generally completed by mothers; measures of disability days for children, also completed by mothers; and health questionnaires, completed annually during the experiment by a parent unless the child reaches 14 years of age.

Since data-gathering methods and operational definitions of variables can affect estimates of central tendency, reliability, and validity, a summary list of factors that may influence survey results is given in Table 24, along with a brief description

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Table 23

SAMPLE CHARACTERISTICS FOR CHILDREN AGED 0-13 AND THEIR FAMILIES, BY HIS SITE

	Children's Age	Family Income[a] (In Dollars)	Education of Head of Family	Children's	
HIS Site	Mean (SD)	Mean (SD)	Mean (SD)	Sex (% Male)	Race (% White)
Seattle	6.1 (3.8)	13,344 (6112)	13.8 (2.8)	51.5	94.3
Fitchburg/Franklin County	6.4 (3.7)	12,299 (5677)	12.5 (3.0)	52.1	97.3
Charleston/Georgetown County	6.4 (3.9)	9,321 (6784)	10.5 (3.7)	52.7	42.6
Dayton	6.1 (3.8)	13,889 (6322)	13.1 (3.7)	47.6	84.3
Combined Sample Across Sites	6.2 (3.8)	12,297 (6471)	12.5 (3.5)	48.6	74.8

[a] 1974 income in all sites except Dayton, which is based on 1973 income.

Table 24

Summary of Methodological Factors That Influence Survey Results and Characteristics of HIS Data-Gathering Methods for Children Aged 0-13

Factors	Medical History Questionnaire
Context or purpose of data collection (e.g., voluntary household survey or evaluation of medical facility they use)	Required of respondents enrolled in study.
Method of administration	Use of proxy respondents (self-administration with interviewer help if required).
Location of interview	Respondent's home.
Respondent interest in subject matter	Probably high, given focus on health status and health care delivery.
Sensitivity of questions[a]	Social relations and mental health are probably the more sensitive aspects of health status (i.e., more threatening), whereas general health perceptions and physical health, in terms of functioning, are probably less sensitive aspects of health status.
Compensation	Two dollars per child (up to a maximum of $20 per family)--five dollars per child for those who both took the screening examination and answered the Medical History Questionnaire.
Position and length of the questions[a]	Form A, Ages 0-4: Numbers 9-12, 14-21, 33A-33O, 34A-34F of 35. Form B, Ages 0-4: 8, 28, 35, 42, 52, 52C, 53, 66, 69A-69F of 72. Form A, Ages 5-13: 5-20, 35-37, 41, 42-53, 54A-54I, 54K-54P, 55A-55F of 56. Form B, Ages 5-13 23, 31, 62, 69, 76, 94, 104, 104A, 105, 118, 121A-121I of 125.
Form of questions	Structured response choices.
Recall period	Varies from present status, past 30 days, past month, past 3 months, past year, ever.
Procedures to aid recall (e.g., use of diaries, memory aids, time bounding)	None.
Instrument complexity	Mental health and social relations constructs tend to be more complex and more abstract (relying on proxy inferences) than other aspects of health (e.g., physical functioning and general health perceptions).
Population group	Sample of children from three sites; ages 0-13; 52.1% male; 77.5% white; mean educational level of head of family, 12.3 years; mean family income, $11,848 (1974 dollars).
Field edit specifications	Careful editing for missing items; call back when more than six items were missing in entire questionnaire.
Data preparation methods	Standardized coding procedures.

[a] Questionnaires for children were completed after the proxy respondent had filled out the adult Medical History Questionnaire.

of how each was handled in the HIS. These methodological details should be kept in mind when one is interpreting the HIS results reported in this volume and attempting to generalize them to other settings. The effects of these factors and others on survey results are discussed in Deming (1971), Sudman and Bradburn (1974), and U.S. Department of Health, Education, and Welfare (1975).

HIS Questionnaire Items

Several batteries of questionnaire items assessing physical health for children aged 0-13, mental health (5-13), social health (5-13), general health ratings (0-13), and satisfaction with development (0-4) were fielded at enrollment in the 5 HIS sites after Dayton (see Tables 25-30 for specific items in each battery). Because most items are adapted from those fielded for persons 14 and older in the HIS, content suitability for assessing health status of children under 14 years and validity are of particular interest in the analyses to be reported subsequently.

PHYSICAL HEALTH

HIS physical health measures focused on limitations in the performance of a variety of specific daily activities, including self-care activities (e.g., bathing), physical activities (e.g., walking), mobility, and role activities (e.g., school work). Questionnaire items were adapted from those used for persons 14 and older in the HIS (Stewart, Ware, Brook, et al., 1978). Those measures were based on the work of Patrick, Bush, and Chen (1973) and of Reynolds, Rushing, and Miles (1974), who focused on the functional limitations of both children and adults.

The functional status items for children aged 0-4 (see Table 25) were constructed to measure three categories of limitations: (1) physical activity, (2) role activity, and (3) self-care activity. The three role-activity items pertained to limitations in kind or amount of ordinary play, ability to take part in ordinary play, and ability to do anything the child wants to do. One item pertained to limitations in self-care activities (e.g., limitations in activities such as eating, dressing, bathing, or using the toilet). Similarly, one item pertained to physical activity: the use of supportive devices to walk.

The HIS questionnaire items on functional status for children aged 5-13 were constructed from 13 items in 4 categories of limitations: (1) mobility; (2) physical activity; (3) role activity; and (4) self-care activity (see Table 26). Whenever a functional limitation was endorsed, the proxy respondent rated the duration as (1) less than 1 month, (2) 1 to 3 months, or (3) more than 3 months. Limitations present for 3 months or less were considered acute; those of longer duration were considered chronic. These designations were chosen to facilitate comparisons with data from other health interview surveys that used similar durations (e.g., NCHS, 1971a).

The mobility items pertained to restrictions in travel in terms of both range and freedom to move about from place to place. The physical activity items pertained to limitations in walking, stooping, bending, climbing stairs, running, and lifting heavy objects. The role activity items pertained to limitations in kinds of schoolwork, ability to go to school, and ability to do anything the child wants to do. The self-care item pertained to limitations in activities such as eating, dressing, bathing, or using the toilet.

Table 25

HIS FUNCTIONAL STATUS CATEGORIES AND ITEMS USED TO ASSESS THE PHYSICAL HEALTH OF CHILDREN AGED 0-4

Category	Item[a]	Content[b]
Physical activity	17	Is this child unable to walk, unless assisted by an adult or by crutches, artificial limb, or braces?
Role activity	21	Does health limit this child in any way from doing anything he or she wants to do?
	20	Does this child's health limit the *kind* or *amount* of ordinary play he or she can do?
	19	Does this child's health keep him or her from taking part in ordinary play?
Self-care activity	18	Because of health, does this child need more help than usual for a child this age in eating, dressing, bathing, or using the toilet?

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4 (see Appendix D).

[b] For each item endorsed, another question was asked to ascertain duration of limitation (see Appendix D).

MENTAL HEALTH

Children's mental health measures were designed to assess both positive and negative states of psychological well-being (as reported by a proxy) for children aged 5-13 (see Table 27). Items selected were based on a content analysis of mental health survey measures of general populations and on the battery of items used for persons 14 and older in the HIS (see Ware, Johnston, Davies-Avery, et al., 1979). Children's items were constructed to measure three aspects of mental health: (1) anxiety (e.g., child seemed relaxed, bothered by nervousness, anxious, or worried), (2) depression (e.g., child seemed lonely, depressed), and (3) positive well-being (e.g., child seemed cheerful or happy and to enjoy things). Operational definitions of these mental health constructs in the HIS focused chiefly on psychological states rather than on somatic states (i.e., depression or physical manifestations of anxiety, such as stomach pain or headache).

The recall period for questions was set at one month prior to enrollment to balance considerations regarding assessment of representative samples of children's characteristic psychological states and behavior with the potential problem of parents' memory decay associated with longer recall periods. Both positively and negatively worded items were included to achieve a wide range of scores and balanced scales. The latter minimize effects of some response biases (e.g., tendencies to endorse or negate items regardless of content). Response categories for the 12 items were based either on the frequency of the event (e.g., child felt lonely: all of the time; most of the time; a good bit of the time; some of the time; a little of the time; none of the time) or on a rating of the problem's degree of intensity (e.g., child bothered by nervousness: extremely—to the point where he or she could not go to school or do usual activities; very much bothered; bothered quite a bit by nerves;

Table 26

HIS FUNCTIONAL STATUS CATEGORIES AND ITEMS USED TO ASSESS THE PHYSICAL HEALTH OF CHILDREN AGED 5-13

Category	Item[a]	Content[b]
Mobility	8	Does this child's health limit him or her in any way in using public transportation or a bicycle?
	9	Does this child need help in getting around the neighborhood because of health?
	10	Does this child have to stay indoors most or all of the day because of health?
	11	Is this child in bed or in a chair for most or all of the day because of health?
Physical activity	12	Does this child's health limit the kind or amount of vigorous activities he or she can do, such as running, lifting heavy objects, or taking part in strenuous sports?
	14	Does this child have trouble bending, lifting, or stooping because of health?
	13	Does this child have trouble either walking several blocks or climbing a few flights of stairs because of health?
	15	Because of health does this child have trouble either walking *one block* or climbing *one flight* of stairs?
	16	Is this child unable to walk unless assisted by an adult or by a cane, crutches, artificial limb, or braces?
Role activity	17	Does health limit this child in any way (from doing anything he or she wants to do)?
	18	Is this child unable to do certain kinds or amounts of schoolwork because of health?
	19	Does this child's health keep him or her from going to school?
Self-care activity	20	Because of health does this child need help with eating, dressing, bathing, or using the toilet?

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13 (see Appendix D).

[b] For each item endorsed another question was asked to ascertain duration of limitation (see Appendix D).

Table 27

HIS ITEMS AND HYPOTHESIZED CATEGORIES USED TO ASSESS MENTAL HEALTH FOR CHILDREN AGED 5-13

Groupings	Item[a]	Content
Anxiety	43	How much of the time during the *past month* did this child seem to feel relaxed and free of tension?[b]
	46	How much of the time during the *past month* did this child seem to be able to relax without difficulty?[b]
	47	How much did this child seem to be bothered by nervousness or "nerves" during the *past month*?
	48	During the *past month* how much of the time did this child seem to be restless, fidgety, or impatient?[c]
	51	During the *past month* did this child seem to be anxious or worried?[c]
Depression	42	How much of the time did this child seem to feel lonely during the *past month*?
	45	How much of the time during the *past month* did this child seem to be depressed (down-hearted or blue)?[b]
	49	During the *past month* how much of the time did this child seem to be moody or to brood about things?[b]
Positive well-being	44	During the *past month* how much of the time did this child generally seem to enjoy the things that he or she did?[b]
	50	How much of the time during the *past month* did this child seem to be cheerful and lighthearted?[b]
	52	During the *past month* how much of the time did this child seem to be a happy person?[b]
	53	How often during the *past month* did this child seem to wake up feeling fresh and rested?[b]

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13 (see Appendix D).

[b] Response categories were based on the frequency of the event (see Appendix D).

[c] Response categories were based on a rating of the degree of intensity of the problem (see Appendix D).

bothered some, enough to notice; bothered just a little by nerves; not bothered at all by nerves). Following careful review of the Medical History Questionnaire's battery of mental health items, fielded in each site (including Dayton's postenrollment), a 15-item behavior-problem battery was added to the annual Health Questionnaires for inclusion at each site beginning in the fall of 1978. It contained 3 or 4 items each in the areas of aggressive behavior, delinquent/antisocial behavior, hyperkinetic behavior, and social withdrawal (see Appendix E).

SOCIAL RELATIONS

In the HIS, social health refers to the quality of the child's interpersonal interactions, defined in terms of how well the child gets along with significant others. The three HIS items, similar to an item used in the National Health Examination Survey (NCHS, 1971b) for children, are listed in Table 28. Items refer to the degree to which the child has gotten along with other children, the family, and teachers.[2]

GENERAL HEALTH RATINGS

General health ratings for children in the HIS were selected from among items originally constructed for adults by Ware and Karmos (1976) (but reduced in number for children) and from general health rating items used in the National Health Examination Survey (NCHS, 1973). Table 29 presents the seven items, pertaining to general health ratings, that were completed for all children (aged 0-13). Items have been defined with respect to time (perceptions of prior and current general health) and with respect to resistance/susceptibility to illness. As shown in Table 29, an attempt was made to balance scales by including both positively and negatively worded items. Response categories varied across items. The prior health, resistance/susceptibility, and two of the current health items were accompanied by five response categories: definitely true; mostly true; don't know; mostly false; and definitely false. The remaining current health item asked for a rating of the child's health in terms of excellent, good, fair, or poor.

SATISFACTION WITH DEVELOPMENT

General health was also defined in terms of parental satisfaction with the development of younger children (aged 0-4) in four areas of potential interest and concern: (1) overall physical development, (2) eating habits, (3) sleeping habits, and (4) bowel habits (see Table 30). Response choices for the four items asked for ratings of satisfaction/worry about development: very satisfied; somewhat satisfied; neither satisfied nor worried; somewhat worried; very worried.

Plan of Analysis

Analyses were performed (a) to evaluate scoring algorithms, (b) to determine how well the child health status measures met the measurement criteria outlined in Chapter 1, and (c) to examine the potential usefulness of the measures for testing hypotheses of the effects of health care financing on health status in the HIS.

Table 28

HIS ITEMS DEFINING SOCIAL RELATIONS FOR CHILDREN AGED 5-13

Item[a]	Content[b]
35	During the *past 3 months*, how well has this child gotten along with other children?
35-A(36)	During the *past 3 months*, how well has this child gotten along with the family?
35-B(37)	During the *past 3 months*, how well has this child gotten along in school with teacher and classmates? (Consider nursery school or kindergarten as school.)

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13 (see Appendix D).

[b] The response categories were as follows: very well, no problems; quite well, hardly any problems; pretty well, occasional problems; not too well, frequent problems; not well at all, serious problems; not in school (for item 35-B(37) only).

Table 29

HIS ITEMS AND HYPOTHESIZED CATEGORIES USED TO OBTAIN GENERAL HEALTH RATINGS FOR CHILDREN AGED 0-13

Groupings	Item[a]	Content
Current health	14	In general, would you say this child's health is excellent, good, fair, or poor?[b]
	34a	This child's health is excellent.[c]
	34d	This child seems to be less healthy than other children I know.[c]
Resistance/susceptibility	34c	This child seems to resist illness very well.[c]
	34f	When there is something going around, this child usually catches it.[c]
Prior health	34b	This child was so sick once I thought he or she might die.[c]
	34e	This child has never been seriously ill.[c]

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4 (see Appendix D).

[b] The response categories were as follows: excellent, good, fair, and poor.

[c] The response categories were as follows: definitely true, mostly true, don't know, mostly false, and definitely false.

Specifically, data were analyzed to determine item central tendency and variability; to provide an empirical test of hypothesized item groupings; to obtain descriptive statistics for scores; to estimate reliability and validity; and to examine sociodemographic correlates of measures constructed.

Table 30

HIS ITEMS DEFINING SATISFACTION WITH THE DEVELOPMENT OF CHILDREN AGED 0-4

Item[a]	Content[b]
9	Considering this child's progress in rolling over, sitting up, walking, and talking, how do you feel about the way (s)he is growing up or developing?
10	How do you feel about this child's eating habits?
11	How do you feel about this child's sleeping habits?
12	How do you feel about this child's bowel habits?

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4 (see Appendix D).

[b] The response categories were as follows: very satisfied, somewhat satisfied, neither satisfied nor worried, somewhat worried, very worried.

SCALING PHYSICAL HEALTH ITEMS

Based on a content analysis of physical health items described in the literature, and of empirical findings for persons 14 years and older in the HIS, the five functional status items for children aged 0-4 were assigned to categories, and scale levels (i.e., the order of items in terms of severity of limitations described) were hypothesized. Categories and hypothesized levels are shown in Table 31. Scalogram analyses (Guttman, 1944) were performed to evaluate the extent to which items in each category defined a unidimensional scale (i.e., the same construct was measured by the items) and were cumulative (i.e., properly ordered by degree of dysfunction such that one pattern of item scores is associated with each scale level). Following a successful scalogram analysis, knowledge of a respondent's scale score would permit prediction of the exact pattern of responses to all items in the scale.

Scaling Procedures

The coefficient of reproducibility (CR) and the coefficient of scalability (CS) were used to evaluate each group of items according to standard scaling procedures. CR values of 0.90 or greater were accepted as evidence of the reproducibility/reliability of a given set of items.[3] CS values of 0.60 or greater were accepted as evidence

Table 31

FREQUENCY AND PERCENTAGE OF LIMITATIONS FOR ITEMS IN THREE FUNCTIONAL STATUS CATEGORIES FOR CHILDREN AGED 0-4

			No Limitations		Chronic Limitations		Acute Limitations		Missing or Inconsistent Data	
Category/Order[a]	Item[a]	Content	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Physical activity	17	Is this child unable to walk unless assisted by an adult or by crutches, artificial limb, or braces?	659	97.1	4	0.6	2	0.3	14	2.1
Role activity										
1	21	Does health limit this child in any way from doing anything he or she wants to do?	653	96.2	8	1.2	3	0.4	15	2.2
2	20	Does this child's health limit the kind or amount of ordinary play he or she can do?	656	96.6	8	1.2	3	0.4	12	1.8
3	19	Does this child's health keep him or her from taking part in ordinary play?	663	97.6	4	0.6	0	0.0	12	1.8
Self-care activity	18	Because of health, does this child need more help than usual for a child this age in eating, dressing, bathing, or using the toilet?	643	94.7	16	2.4	2	0.3	18	2.7

[a] Items ordered within categories from least to most severe.

[b] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4 (see Appendix D).

of the scalability of a given set of items.[4] (For a more detailed description of scalogram analysis, see Section II of Ware, Brook, Davies-Avery, et al., forthcoming.) Because a very large proportion of the children in general populations are free from limitations, CR values tend to be high regardless of whether a cumulative scale is defined. For this reason, a more conservative evaluation of the scalability of each group of items was peformed by conducting scalogram analyses for only those persons having one or more limitations. This decreased the proportion of individuals having perfect scores; however, score distributions were still highly skewed. Also, because only a small number of children aged 0-4 had any chronic or acute limitation (4 to 18 per site), scalogram analyses were conducted on the combined-sites sample of children 0-4 years old rather than within individual HIS sites. Even when children were pooled across sites, the number of children having at least one limitation was still very small.

The 13 functional limitations items for children aged 5-13 were also assigned to categories, and scale levels were hypothesized as shown in Table 32. The same set of criteria as that described above was used as evidence of the scalability of a given set of items. Again, because physical limitations were rare, a more conservative approach to the scalogram analysis was adopted by studying only those children 5-13 years old who had one or more limitations and by combining data across sites. The CR and CS criteria described above were also applied to data for children 5-13 years old.

In those instances in which the number of children with any limitations was too small to test adequately for reproducible scales, dichotomous functional limitations scores of zero (absence of limitations) or one (presence of one or more limitations of any type and duration) for each impairment category were assigned.

Missing Data

For purposes of testing, children with one or more missing responses to physical limitations items were eliminated. After verifying a multi-item scale, it was possible to estimate responses for missing items in Guttman scales by reviewing completed items in the same scale. This was done by one of the present authors in conjunction with a staff member familiar with this area. The pattern of responses across completed items in a given scale was used to estimate missing items and the most appropriate scale level to be assigned to the respondent. When levels could not be estimated with confidence, the respondent was assigned a missing score and was excluded from further analyses involving that scale.[5] When functional limitations variables were scored dichotomously, respondents were assigned a missing score under either of two conditions: (1) they were missing all the items, or (2) completed items indicated no limitations and the other items were missing.

SCALING MENTAL HEALTH, GENERAL HEALTH PERCEPTIONS, SOCIAL RELATIONS, AND SATISFACTION WITH DEVELOPMENT ITEMS

Eleven items for children 0-4 years old and 22 items for those 5-13 years old were hypothesized to measure mental health, general health ratings, social relations, and satisfaction with development. These items were grouped according to

Table 32

FREQUENCY AND PERCENTAGE OF LIMITATIONS FOR ITEMS IN FOUR FUNCTIONAL STATUS CATEGORIES FOR CHILDREN AGED 5-13

Category/Order[a]	Item[a]	Content	No Limitations		Chronic Limitations		Acute Limitations		Missing or Inconsistent Data	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
Mobility										
1	8	Does this child's health limit him or her in any way in using public transporation or a bicycle?	1422	96.5	9	0.6	8	0.5	34	2.3
2	9	Does this child need help in getting around the neighborhood because of health?	1439	97.7	3	0.2	6	0.4	25	1.7
3	10	Does this child have to stay indoors most or all of the day because of health?	1438	97.6	0	0.0	7	0.5	28	1.9
4	11	Is this child in bed or in a chair for most or all of the day because of health?	1439	97.7	4	0.3	5	0.3	25	1.7
Physical activity										
1	12	Does this child's health limit the kind or amount of vigorous activities he or she can do, such as taking part in strenuous sports?	1400	95.0	33	2.2	14	1.0	26	1.8
2	14	Does this child have trouble bending, lifting, or stooping because of health?	1434	97.4	12	0.8	4	0.3	23	1.6
3	13	Does this child have trouble either walking several blocks or climbing a few flights of stairs because of health?	1434	97.4	10	0.7	5	0.3	24	1.6
4	15	Because of health does this child have trouble either walking *one block* or climbing *one flight* of stairs?	1442	97.9	4	0.3	1	0.1	26	1.8
5	16	Is this child unable to walk, unless assisted by an adult or by a cane, crutches, artificial limb, or braces?	1446	98.2	4	0.3	0	0.0	23	1.6
Role activity										
1	17	Does health limit this child in any way (from doing anything he or she wants to do)?	1405	95.4	32	2.2	9	0.6	27	1.8
2	18	Is this child unable to do certain kinds or amounts of schoolwork because of health?	1430	97.1	16	1.1	7	0.5	20	1.4
3	19	Does this child's health keep him or her from going to school?	1421	96.5	6	0.4	18	1.2	28	1.9
Self-care activity	20	Because of health, does this child need help with eating, dressing, bathing, or using the toilet?	1442	97.9	5	0.3	7	0.5	19	1.3

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[a] Items ordered within categories from least to most severe.

[b] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13 (see Appendix D).

the specific content areas within the categories they were hypothesized to measure (see Tables 27-30). The three main categories (i.e., anxiety, depression, and positive well-being) for the 12 mental health items were based on scales constructed for persons 14 and older in the HIS mental health battery (Ware, Johnston, Davies-Avery, et al., 1979). Groupings for the social relations and satisfaction with development items were based on content analyses of items. Categories for the 7 item general health ratings were based on content analyses of items and scales constructed for persons 18 and older in non-HIS studies (Ware and Karmos, 1976).

Scaling Procedures

A modified version of Likert's (1932) Method of Summated Ratings was used to test the appropriateness of the various item groupings for children in the combined samples and in individual sites. Several steps involving multitrait scaling and factor analysis were followed in constructing summated rating scales from the various items. Briefly, using multitrait scaling procedures, matrices of item-scale correlations for each age group were evaluated according to two criteria: (1) the Likert-type criterion, which required that each item be substantially correlated (0.40 or higher) with the sum of other items in the same hypothesized grouping, and (2) the discriminant validity criterion, which required that item-scale correlations, corrected for overlap, be higher for the scale the item was hypothesized to measure than for all other scales in the matrix. Each time the correlation (corrected for overlap) between an item and its hypothesized scale was more than two standard errors higher than the correlation with another scale, a successful discriminant validation was counted. A discriminant validity scaling error was considered "definite" whenever a correlation (corrected for overlap) between an item and its hypothesized scale was two standard errors lower than a correlation between that item and another scale. Errors were considered "probable" whenever these correlations were within two standard errors of each other.

Correlations among items were further evaluated by using factor analysis to determine whether any unhypothesized groups of items could be identified and whether standardized items contained the same proportion of information about the construct (i.e., whether items could all receive equal weights). Items in each hypothesized category that met all the above tests were simply summed to derive scale scores. (For a detailed explanation of the Method of Summated Ratings, multitrait scaling procedures, and factor analytic techniques employed in the HIS, see Section II of Ware, Brook, Davies-Avery, et al., forthcoming.) Finally, the 7 items rating general health (see Table 29) were combined (and recoded when necessary) to form a longer General Health Ratings Index;[6] the 12 mental health items were combined (and recoded when necessary) to form an overall Mental Health Index.

Missing Data

When summated ratings scales were scored, responses for missing items were estimated from completed items measuring the same construct. In most cases, the subject item mean for known items pertaining to the same construct served as the estimate of the missing item.[7] For instance, if responses for two depression items were available for a given respondent (e.g., scores of three and three on five-point response categories), but a third depression item response was missing for that respondent, the average (i.e., three) of the two available items was used as the estimated value for the third item. When responses to all items in a given scale were missing for the respondent, the respondent received a missing score on that scale.

DESCRIPTIVE STATISTICS

After scales to measure children's health status had been constructed, distributions of scale scores were evaluated. Score distributions should adequately represent the true distribution of health status on the particular dimension being measured, thus allowing for detection of differences in health status in the specific population whose health status is being assessed. Descriptive statistics for children's health status scales were evaluated to identify those that had fairly normal (or at least symmetrical) score distributions. Identification of scales with skewed score distributions would indicate that the populations being studied were healthy or unhealthy (depending on the direction of skewness) or indicate where scale revisions may be necessary. When skewed distributions are due to faulty measurement, it is necessary to reduce coarseness and/or increase variability in order to improve the ability of the measures to detect meaningful differences in health status.

RELIABILITY OF SCALES

Reliability was estimated for the mental health, social relations, general health perceptions, and satisfaction with development scales for combined samples across sites and for each age group within sites using an internal-consistency approach based on Cronbach's (1951) Alpha formula. Internal-consistency reliability is a function of scale length (number of items) and homogeneity (average inter-item correlation), and is a measure of the extent to which measured variance in scale scores is due to true score (rather than random error). Scale scores were considered sufficiently reliable for group comparisons in the HIS when internal-consistency estimates exceeded 0.50, a recommended minimum standard for that purpose (Helmstadter, 1964). (For a more detailed discussion of reliability, see Section II of Ware, Brook, Davies-Avery, et al., forthcoming.)

HOMOGENEITY OF SCALES

Estimates of item homogeneity (i.e., average inter-item correlations) were computed for the mental health, social relations, general health perceptions, and satisfaction with development scales for children aged 0-4 and 5-13, both for combined samples and within sites. Homogeneity is a scale characteristic related to, but not the same as, the reliability of the scale score. Briefly, estimates of homogeneity are useful for two reasons: (1) because they indicate the extent to which scale items are reliable measures of the same construct, and (2) because they are unaffected by the number of items in a scale. Homogeneity estimates provide one basis for directly comparing scales that differ in length. In other fields, coefficients of 0.30 or greater have served as a standard for evaluating homogeneity (see Section II of Ware, Brook, Davies-Avery, et al., forthcoming); however, it is not clear whether this standard should be applied to measurement of child health.

VALIDITY OF SCALES

Validity refers to the extent to which measures assess what they were intended to assess. In the case of health status, validity refers not only to whether each measure reflects differences in individual health, as opposed to some other concept, but also refers to the extent to which the intended health construct is measured (e.g., mental health as opposed to physical health). Two analytical methods were used to evaluate validity: content validation and construct validation. (For a detailed discussion of validity analyses employed in the HIS, see Section II of Ware, Brook, Davies-Avery, et al., forthcoming.)

Content Validation

Content validation refers to the determination of whether items in a given battery adequately represent all relevant constructs of interest. As a first step, HIS child health measures were evaluated in terms of face validity (i.e., whether items appear to describe the construct they were intended to describe). Then the representativeness of the items in each scale was evaluated in relation to the universe of health constructs being studied. Thus, within a specific dimension of health status (e.g., mental health), at least one item should represent each construct selected for inclusion in that dimension (e.g., anxiety, depression, and positive well-being in the case of mental health). Moreover, within each construct selected for measurement, enough items should be included to achieve reliability and validity (e.g., within anxiety, inclusion of items that refer to several aspects of anxiety, such as being relaxed, nervous, or high-strung, may result in a reliable and valid score).

The empirical literature on measurement of various dimensions of children's health status helped to identify some relevant constructs. However, the literature review did not yield measures that appeared to be comprehensive with respect to a multicomponent model of children's health status such as that adopted in the HIS. Therefore, in assessing children's measures, it was necessary to augment findings from the review with results of HIS content analyses for adults and adolescents and with physician consultants' evaluations. For physical health measures, for example, categories and items were reviewed by physician consultants, such as pediatricians, to assess face validity and age-appropriateness of items. Thus, measures of child health were compared with the content measures identified through several sources to determine whether the domains (content areas) of the constructs used were represented for children.

Construct Validation

Construct validation represents an attempt to understand what a scale measures when no adequate criterion (previously validated measure of the construct) exists. Associations among physical, mental, and social health, satisfaction with development, and general health scale scores, and other health variables, were analyzed for each age group for combined-site samples to provide additional understanding of the meaning of scores and to test construct validity hypotheses.

According to the construct approach to measurement validation, a measure is presumed to be valid to the extent that the direction and magnitude of its associations with other variables corresponds to the pattern specified by theory. In addition to studying associations among children's health status measures, six health variables developed for the HIS were used to study construct validity:

1. *Presence of Chronic/Serious Conditions:* Specified by responses to questionnaire items (see Tables 33 and 34). These were problems that could result in moderate to severe disability (e.g., heart disease, epilepsy, chronic ear infection, asthma). Responses were summed to determine the number of conditions (out of a possible 13 for children 0-4 years old and 18 for those 5-13 years old) reported for each child.
2. *Presence of Acute Illness/Symptoms:* Specified by responses to questionnaire items (see Tables 35 and 36). These were problems that occurred within the last 30 days and resulted in mild to moderate discomfort (e.g., colds, earaches, diarrhea). Responses were summed to determine the number of conditions (out of a possible 15 for each age group) reported for each child.

Table 33

ITEMS DEFINING CHRONIC/SERIOUS ILLNESS INDICATORS FOR CHILDREN AGED 0-4

Item[a]	Content
8	During the *past 12 months*, has a doctor ever said that this child had a middle ear infection?
28	During the *past 12 months*, has a doctor told you that this child has anemia, or is he or she *currently* under treatment for it?
35	Has a doctor ever said that this child had lead poisoning?
42	Has a doctor ever told you that this child had cancer?
52	Has this child ever had a fever convulsion, that is, a fit or seizure *with* a high fever?
52A (53)	Has this child ever had a convulsion, fit, or seizure *without* a high fever?
66	Does this child have any missing limbs--that is, arms, legs, or fingers that are missing or have been amputated?
69	As far as you know, during the *past 12 months*, has this child had any of the following conditions:
69A	Heart trouble or congenital heart trouble
69B	Cerebral palsy
69C	Kidney or bladder trouble or urine trouble
69D	Asthma
69E	Mental retardation, or development delay or lag
69F	Hernia, other than umbilical hernia

[a] Item numbers from Form B of the Medical History Questionnaire, Ages 0-4 (see Appendix D).

Table 34

ITEMS DEFINING CHRONIC/SERIOUS ILLNESS INDICATORS FOR CHILDREN AGED 5-13

Item[a]	Content
23	During the *past 12 months*, has a doctor ever said that this child had a middle ear infection? ("otitis media," pronounced oh-TIE-tiss MEE-dee-a)
31	Has a doctor ever said that this child had asthma?
62	During the *past 12 months*, has a doctor told you that this child has anemia (a-NEE-mee-a, sometimes called low blood), or is he or she currently under treatment for it?
69	Has a doctor ever said that this child had lead poisoning?
76	Has a doctor ever said that this child had a kidney, bladder, or urine infection?
94	Has a doctor ever told you that this child had cancer?
104	Has this child ever had a fever convulsion (con-VUL-shun), that is, a fit or seizure *with* a high fever?
104A (105)	Has this child ever had a convulsion, fit, or seizure *without* a high fever?
118	Does this child have any missing limbs--that is, arms, legs, or fingers that are missing or have been amputated?
121A	During the *past 12 months*, has child had arthritis?
121B	During the *past 12 months*, has child had chronic sinusitis (sinus trouble)?
121C	During the *past 12 months*, has child had heart trouble or congenital heart disease?
121D	During the *past 12 months*, has child had mental illness?
121E	During the *past 12 months*, has child had cerebral palsy?
121F	During the *past 12 months*, has child had frequent headaches?
121G	During the *past 12 months*, has child had mental retardation?
121H	During the *past 12 months*, has child had hernia?
121I	During the *past 12 months*, has child (boys only) had an undescended testicle?

[a] Item numbers from Form B of the Medical History Questionnaire, Ages 5-13 (see Appendix D).

Table 35

ITEMS DEFINING ACUTE ILLNESS/SYMPTOMS FOR CHILDREN AGED 0-4

Item[a]	Content[b]
33A	Chicken pox
33B	A stomachache without vomiting for less than 24 hours
33C	A stomach "flu" or virus, with vomiting or diarrhea lasting at least 2 days
33D	An ear infection or earache with fever
33E	An infection on the skin without fever
33F	A sore throat with high fever or tonsillitis
33G	A cough with fever for at least 3 days
33H	Allergies (such as to grass or certain foods) without asthma
33I	Diarrhea (loose bowel movements) lasting for at least 3 days
33J	Poor eating habits
33K	Accidental poisoning or eating something harmful
33L	A convulsion or fit (seizure)
33M	Nosebleed
33N	A cold or runny nose without fever
33O	Head injury without loss of consciousness or vomiting

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4 (see Appendix D).

[b] The response categories were as follows: child did not have the symptom at all in the past 30 days; child had the symptom, but you did not see a doctor about it; child had the symptom, and you did see a doctor about it.

3. *Adult Health Status Ratings:* Parental ratings of their own health. These ratings were used as validity variables for similarly scored children's scales. Scores representing perceptions of health in general (e.g., Current Health, Health Worry, Resistance/Susceptibility, and Prior Health) and overall feelings of psychological well-being (mental health) were computed for each adult rater who served as a proxy respondent for the child and for each spouse or adult partner when ratings were available (see Tables 37 and 38).
4. *Pain/Distress:* One item pertaining to the degree of pain or distress experienced by the child during the past 3 months.
5. *Adult Worry:* One item pertaining to the degree of parental worry about the child's health during the past 3 months.
6. *Adult Worry Regarding Social Relations:* One item pertaining to the degree of parental worry about the child's relations (i.e., getting along) with others.

Summary statistics for the above validity variables, combined across sites, are given in Table 39.

Table 36

ITEMS DEFINING ACUTE ILLNESS/SYMPTOMS FOR CHILDREN AGED 5-13

Item[a]	Content[b]
54A	Chicken pox
54B	Stomachache, without vomiting, for less than 24 hours
54C	A stomach "flu" or virus, with vomiting or diarrhea lasting at least 2 days
54D	An earache, or earache with fever
54E	An infection on the skin, without fever
54F	Sore throat with high fever, or tonsillitis
54G	Cough with a fever for at least 3 days
54H	Allergies (such as to grass or certain foods) without asthma
54I	Diarrhea (loose bowel movements) lasting for at least 3 days
54J	Poor eating habits
54L	A convulsion or fit (seizure)
54M	Nosebleed
54N	A cold or runny nose without fever
54O	Head injury, with loss of consciousness or vomiting
54P	Burning or pain with urination

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13 (see Appendix D).

[b] The response categories were as follows: child did not have the symptom at all in the past 30 days; child had the symptom, but you did not see a doctor about it; child had the symptom, and you did see a doctor about it.

The direction of relationships that should be observed for valid scales was hypothesized (see Table 40). To summarize: (1) Positively-defined health status scales and variables should be positively related (e.g., Current and Prior Health). (2) Negatively defined scales and variables should be positively related (e.g., Pain/Distress and Acute Illness/Symptoms, or Anxiety and Depression). (3) Positively and negatively defined scales and variables should be negatively related (e.g., Current Health and Chronic Illness, or Depression and Social Relations). To the extent that relationships conform to hypotheses, they support both the construct validity of the measure and the theory underlying the relationship.

With respect to the relative magnitudes of the associations defined in Table 40, it was hypothesized that relationships among dimensions of the same health component (e.g., Anxiety and Depression within mental health) would be higher than those among dimensions of different health components (e.g., Anxiety and Physical Activities within mental and physical components, respectively). Based on the assumption that aspects of general health perceptions overlap with physical, mental, and social components of health, it was expected that the general health ratings scales would be more consistently and more highly related to those scales than physical, mental, and social health scales would be to each of the other components.

Table 37

Content of Items Used To Score the Adult Current Health Index[a]

Item[b]	Content[c]
128A	According to the doctors I've seen, my health is now excellent.
128D	I feel better now than I ever have before.
128I	I am somewhat ill.
128L	I'm not as healthy now as I used to be.
128Q	I'm as healthy as anybody I know.
128V	My health is excellent.
128Z	I have been feeling bad lately.
128DD	Doctors say that I am now in poor health.
128FF	I feel about as good now as I ever have.

[a] Items summed for scale after reversing items 128I and 128L, 128Z and 128DD.

[b] Item numbers from Form A of the Medical History Questionnaire, Ages 14 and Older.

[c] For each statement, the respondent answers as follows: definitely true, mostly true, don't know, mostly false, definitely false.

To facilitate interpretation of correlations among health status scales and validity variables included in the construct validity matrix, a matrix of product-moment correlations computed for children 5-13 years old was factor analyzed.[8] Three factors corresponding to hypothesized dimensions of health status were extracted by using a principal components solution (Nie, Hull, Jenkins, et al., 1975); two factors associated with eiqenvalues greater than unity and representative of physical and mental health dimensions were rotated to orthogonal simple structure using Kaiser's (1958) Varimax method.[9] The validity of each children's health status measure was estimated by examining the pattern of its correlations across the two factors.

Finally, ratings of health for both parents (i.e., for both the proxy and the other adult rater) were expected to have low, but statistically significant, relationships with their children's health status ratings for several reasons. First, genetic factors may influence health status correlations. Second, some illnesses and environmental events (e.g., stress, death of family member) presumably affect all family members to some extent. Third, the behavior of individuals within a family probably affects that of other family members (e.g., parental behavior affects that of the child and vice versa). Fourth, because the parent (proxy) provided the child ratings, some response biases (e.g., acquiescence or socially desirable response set) might be operating and could be correlated across sets of ratings. If correlations between parents' and children's reported health statuses are low, they would tend to strengthen the validity of child health measures because they would help to rule out response biases as a major factor in the obtained relationships. Conversely, if those correlations are strong, especially between like health components (e.g., mental health for proxy and child), response biases could not be ruled out as a major

Table 38

CONTENT OF ITEMS USED TO SCORE THE ADULT MENTAL HEALTH INDEX[a]

Item[b]	Content
53	How happy, satisfied, or pleased have you been with your personal life during the past month?[c]
54	How much of the time have you felt lonely during the past month?[d]
55	How often did you become nervous or jumpy when faced with excitement or unexpected situations during the past month?[e]
56	During the past month, how much of the time have you felt that the future looks hopeful and promising?[d]
58	How much of the time, during the past month, has your daily life been full of things that were interesting to you?[d]
59	How much of the time, during the past month, did you feel relaxed and free of tension?[d]
60	During the past month, how much of the time have you generally enjoyed the things you do?[d]
61	During the past month, have you had any reason to wonder if you were losing your mind, or losing control over the way you act, talk, think, or feel, or of your memory?[c]
63	Did you feel depressed during the past month?[c]
64	During the past month, how much of the time have you felt loved and wanted?[d]
65	How much of the time, during the past month, have you been a very nervous person?[d]
66	When you got up in the morning, this past month, about how often did you expect to have an interesting day?[e]
68	During the past month, how much of the time have you felt tense or "high-strung"?[d]
69	During the past month, have you been in firm control of your behavior, thoughts, emotions, feelings?[c]
71	During the past month, how often did you feel that you had nothing to look forward to?[e]
73	How much of the time, during the past month, have you felt calm and peaceful?[d]
74	How much of the time, during the past month, have you felt emotionally stable?[d]
75	How much of the time, during the past month, have you felt downhearted and blue?[d]
76	How often have you felt like crying, during the past month?[e]
78	During the past month, how often did you feel that others would be better off if you were dead?[e]
79	How much of the time, during the past month, were you able to relax without difficulty?[d]
80	During the past month, how much of the time did you feel that your love relationships, loving and being loved, were full and complete?[d]
81	How often, during the past month, did you feel that nothing turned out for you the way you wanted it to?[e]
82	How often have you been bothered by nervousness, or your "nerves," during the past month?[c]
83	During the past month, how much of the time has living been a wonderful adventure for you?[d]
85	How often, during the past month, have you felt so down in the dumps that nothing could cheer you up?[e]
87	During the past month, how much of the time have you felt restless, fidgety, or impatient?[d]
89	During the past month, how much of the time have you been moody or brooded about things?[d]
90	How much of the time, during the past month, have you felt cheerful, light-hearted?[d]
93	During the past month, have you been anxious or worried?[c]
94	During the past month, how much of the time were you a happy person?[d]
95	How often, during the past month, did you find yourself having difficulty trying to calm down?[e]
96	During the past month, how much of the time have you been in low or very low spirits?[d]
98	During the past month, have you been under or felt you were under any strain, stress, or pressure?[c]

[a] Items are summed for scale after reversing the following items: 53, 56, 58, 60, 61, 64, 66, 69, 73, 74, 79, 80, 83, 90, 94.

[b] Item numbers from Form A of the Medical History Questionnaire, Ages 14 and Older.

[c] The response categories were based on a rating of the degree of intensity of the problem.

[d] The response choices were as follows: all of the time; most of the time; a good bit of the time; some of the time; a little of the time; none of the time.

[e] The response choices were as follows: always, very often, fairly often, sometimes, almost never, never.

Table 39

SUMMARY OF INFORMATION ABOUT HEALTH STATUS VALIDITY VARIABLES

Measure	Item[a]	Mean[b]	Standard Deviation	Definition	Association[c]
			Ages 0-4		
Pain/distress	1	1.66	0.72	Amount of pain or distress caused by child's health	-
Chronic/serious illness	13	0.38	0.65	Presence of problems that could result in moderate to severe disability (e.g., ear infections, anemia, cancer, fever convulsions)	-
Acute illness/symptoms	15	1.77	1.49	Problems that occurred within the last 30 days and resulted in mild to moderate discomfort (e.g., ear infection, sore throat, cold)	-
Adult worry	1	1.83	0.85	Amount of adult worry about child's health	-
Adult current health[d]	9	34.29	7.13	Feeling that present health is good or excellent, better than before and as healthy as anyone the proxy respondent knows	+
Adult mental health[d]	34	153.04	24.19	Absence of feeling of anxiety and depression and presence of feelings of positive well-being and self-control in the past month (proxy respondent)	+
Other adult current health[d]	9	35.30	6.08	Feeling that present health is good or excellent, better than before and as healthy as anyone the other adult in the household knows	+
Other adult mental health[d]	34	162.07	19.88	Absence of feeling of anxiety and depression and presence of feelings of positive well-being and self-control in the past month (other adult in household)	+
			Ages 5-13		
Pain/distress	1	1.53	0.71	Amount of pain or distress caused by child's health	-
Chronic/serious illness	18	0.40	0.67	Presence of problems that could result in moderate to severe disability (e.g., ear infections, asthma, anemia, lead poisoning, cancer)	-
Acute illness/symptoms	15	1.40	1.48	Problems that occurred within the last 30 days and resulted in mild to moderate discomfort (e.g., earache, sore throat, cold)	-
Adult worry regarding getting along	1	1.56	0.82	Adult's feeling of a great deal of worry about the child's problems in getting along with others	-
Adult worry	1	1.59	0.80	Amount of adult worry about child's health	-
Adult current health[d]	9	34.08	7.66	Feeling that present health is good or excellent, better than before and as healthy as anyone the proxy respondent knows	+
Adult mental health[d]	34	154.02	26.71	Absence of feeling of anxiety and depression and presence of feelings of positive well-being and self-control in the past month (proxy respondent)	+
Other adult current health[d]	9	34.99	6.95	Feeling that present health is good or excellent, better than before and as healthy as anyone the other adult in the household knows	+
Other adult mental health[d]	34	164.09	21.10	Absence of feeling of anxiety and depression and presence of feelings of positive well-being and self-control in the past month (other adult in the household)	+

[a] Number of questionnaire items.

[b] Possible scores range from 0-13 or 0-18 for "chronic/serious illness"; 0-15 for "acute illness/symptoms"; 9-45 for "adult and other adult current health"; 34-203 for "adult and other adult mental health"; 1-4 for "pain/distress," "adult worry," and "adult worry regarding getting along."

[c] Hypothesized direction of association between variable and *positively* defined health status measure.

[d] Self-administered adult measures from the Medical History Questionnaire for persons 14 and older.

Table 40

HYPOTHESIZED DIRECTION OF ASSOCIATION BETWEEN HEALTH STATUS SCALES AND VALIDITY VARIABLES

Scales/Validity Variables	Direction of Scoring[a]	CH	RS	PH	P	A	D	PWB	SR	DS	CI	AI	FL	AWS	AW	ACH	AMH	OACH
Current Health (CH)	+																	
Resistance/Susceptibility (RS)	+	+																
Prior Health (PH)	+	+	+															
Pain/Distress (P)	-	-	-	-														
Anxiety (A)[b]	-	-	-	-	+													
Depression (D)[b]	-	-	-	-	+	+												
Positive Well-Being (PWB)[b]	+	+	+	+	-	-	-											
Social Relations (SR)[b]	+	+	+	+	-	-	-	+										
Satisfaction with Development (DS)[c]	+	+	+	+	-	-	-	+	+									
Chronic/Serious Illness (CI)	-	-	-	-	+	+	+	-	-	-								
Acute Illness/Symptoms (AI)	-	-	-	-	+	+	+	-	-	-	+							
Functional Limitations (FL)	-	-	-	-	+	+	+	-	-	-	+	+						
Adult Worry Regarding Social Relations (AWS)[b]	-	-	-	-	+	+	+	-	-	-	+	+	+					
Adult Worry (AW)[d]	-	-	-	-	+	+	+	-	-	-	+	+	+	+				
Adult Current Health (ACH)[e]	+	+	+	+	-	-	-	+	+	+	-	-	-	-	-			
Adult Mental Health (AMH)[e]	+	+	+	+	-	-	-	+	+	+	-	-	-	-	-	+		
Other Adult Current Health (OACH)[f]	+	+	+	+	-	-	-	+	+	+	-	-	-	-	-	+	+	
Other Adult Mental Health (OAMH)[f]	+	+	+	+	-	-	-	+	+	+	-	-	-	-	-	+	+	+

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[a] Signs reflect the direction of scoring (e.g., a (+) indicates that a high scale score reflects favorable health; a (-) indicates that a high scale score reflects unfavorable health).

[b] Scales for children aged 5-13 only.

[c] Scale for children aged 0-4 only.

[d] Degree of parental (proxy's) worry about the child's health.

[e] Proxies' ratings of their own current health and overall feelings of psychological well-being.

[f] Ratings by spouse or adult partner (of the proxy) of their own current health and overall feelings of psychological well-being.

contributor to parent-child health status relationships, and the validity of reported ratings for children would be suspect.

Coefficients of Association

Estimates of association computed to study construct validity were based on the gamma coefficient that is appropriate for ordinal data. Gamma is sensitive to monotonic linear and nonlinear relationships. A gamma coefficient indicates how much more probable it is to observe "like" than "unlike" order in two classifications (Goodman and Kruskal, 1954). Whether an individual gamma coefficient is statistically significant varies as a function of sample size and probability of ties in ranked data (i.e., scale scores).[10] As required by the regression and factor analyses, product-moment correlations were also computed to yield parametric estimates of linear association for interval data and of monotonic relationships for ranked data. With few exceptions, analysis of gamma and product-moment statistics led to the same conclusions. Differences are noted and explained below.

Median Association

Because there were multiple measures for most health components, median gamma associations (i.e., the middle gamma coefficient when a set of associations are ranked in order by size) were computed for all scales within a single component of health (e.g., physical or mental health). Median gammas were also computed for scale associations among the various components of health (e.g., between physical and mental health scales). These median associations characterized the data and enabled comparisons of magnitudes of scale associations within and across health components specified for validity analyses.

SOCIODEMOGRAPHIC CORRELATES OF HEALTH STATUS

Associations between the scale scores for physical health, mental health, social relations, satisfaction with development, and general health perceptions and seven demographic and socioeconomic variables were analyzed for the total sample. The socioeconomic and demographic variables included age and sex of the child, race and education (highest grade completed) of the head of household, family income (in 1974 dollars), number of children in the family, and the birth order of the child (first/only child or later born). In the absence of agreed-upon theory, these associations were not considered as evidence of the validity of the measures but were studied to provide more complete information about group differences in child health.

FOOTNOTES

1. For analyses of child health, Fitchburg and Franklin County, Massachusetts, were treated as a single site, as were Charleston and Georgetown County, South Carolina. Thus, the major analyses focus on three sites: Seattle, Washington, Massachusetts, and South Carolina.

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2. The original Social Health battery fielded in Dayton (first HIS site) contained six items. Three were social relations items similar to the present social relations battery. The remaining three items assessed parental (proxy) concern about the child's social relations with significant others (see Appendix Tables A.3 and A.4 for exact item content).

3. CR represents the extent to which a person's item responses can be predicted from knowledge of the Guttman scale score. (For further discussion, see Section II of Ware, Brook, Davies-Avery, et al., forthcoming.)

4. CS represents the proportion of possible improvement in CR that was achieved relative to the minimum marginal reproducibility associated with the form (distribution) of responses to scale items. (For further discussion, see Section II of Ware, Brook, Davies-Avery, et. al., forthcoming.)

5. A data status indicator was assigned to all respondents reflecting the estimated accuracy of the scale scores. A zero indicated a confidently accurate scale score; a (1) indicated an estimated score, probably accurate; a (2) indicated an estimated score, maybe inaccurate; and a (-1) indicated a missing score on a particular scale.

6. The index was called a General Health Ratings Index, as distinct from a General Health Perceptions Index, to indicate that these are parents' ratings of their children's general health, not children's perceptions of their own health.

7. This option was used in all scaling studies. However, a different method was used in studying correlations among measures for purposes of measuring validity. In that case, the sample means for the missing item became the estimate of that item. Because of limitations in computer software, the population mean was assigned to persons missing all items in a given scale. This occurred in only a few cases. For example, for the Current Health Scale for children 5-13 years old, two out of 1473 children missed all items in the scale and were assigned the population mean as their score. This method of assigning the population mean when all items are missing in a scale is not the preferred practice, but given that it occurred rarely, we are confident that it had no effect on the coefficients reported here. It certainly had no effect on our conclusions.

8. Gamma coefficients were also factor analyzed; conclusions drawn from that analysis were the same as for product-moment correlations, and so only the latter will be reported. As would be expected (given that gamma coefficients for physical health scales were higher than product-moment correlations between those measures), correlations between physical health scales and the physical health factor were higher in the factor analysis of gamma coefficients. Because mental health measures were not fielded for children 0-4 years old, and a mental health factor could not, therefore, be studied, a factor analysis of the validity matrix for that age group was not performed.

9. Rotation of a third factor, which was also associated with an eigenvalue greater than unity, identified a dimension of general health perceptions with highest loadings for scales hypothesized to measure general health and secondary loadings for physical and (to a lesser degree) mental health scales.

10. See Appendix C for an example of the computations required to compute significance for gamma statistics with different probabilities of ties and sample sizes.

Chapter 4

RESULTS

Scaling Physical Health Items

Studies of the scalability of HIS items hypothesized to measure physical health by using enrollment data from combined-site samples focused on the 5 items for children 0-4 years old (see Table 25) and the 13 items for those 5-13 years old (see Table 26). Results of these studies are described as follows: (1) descriptive statistics for items, (2) scalogram analyses and definitions of derived variables, and (3) descriptive statistics for derived variables.

DESCRIPTIVE STATISTICS: ITEMS

The number of children in each age group with any functional limitation(s) was quite small (see Tables 31 and 32). For children 0-4 years old, the percentage reported as having no limitations of any duration on each of the five items ranged from 94.7 percent to 97.6 percent. From 0.6 percent to 2.4 percent of the children 0-4 years old had chronic limitations (3 months and longer); 0.0 percent to 0.4 percent had acute limitations; and 1.8 percent to 2.7 percent had either missing or inconsistent data. For children 5-13 years old, the percentage reported as having no limitations of any duration on each of the 13 items ranged from 95.0 percent to 98.2 percent. From 0.0 percent to 2.2 percent of the children 5-13 years old showed chronic limitations on each of the 13 items; 0.0 percent to 1.2 percent had acute limitations; and 1.3 percent to 2.3 percent had either missing or inconsistent data.

SCALOGRAM ANALYSES AND DEFINITIONS OF HIS MEASURES: OVERVIEW

Scalogram analyses were performed on hypothesized physical health scales for combined-site samples of children aged 0-4 and 5-13. Because of the very small numbers of children in both age groups that were reported to have one or more functional limitations (either chronic or of any duration), all scaling results described below should be considered *preliminary*. Our analyses need to be replicated on larger samples of children with limitations. For HIS analytic purposes, dichotomous (present/absent) functional limitations scores will be assigned to children in the 0-4 age group for all physical health measures. Except for the Physical Activity Scale, the same procedure will be followed for children aged 5-13. For that scale in the older age-group, the sample size was sufficiently large (N = 50) to permit a preliminary scalogram analysis of physical activity limitations, and results supported construction of a cumulative scale. To facilitate future research, the next sections briefly summarize the results of scalogram analyses based on very small samples of children. Three limitations categories (role activity, self-care activity, and physical activity limitations) are described for children aged 0-4, and three limitations categories (self-care/mobility, role activity, and physical activity limitations) are described for those 5-13.

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SCALOGRAM ANALYSES AND DEFINITIONS OF HIS MEASURES: AGES 0-4

The three items defining levels of the hypothesized cumulative scale for role activity limitations and the single items representing physical activity limitations and self-care limitations are presented in Table 31. For the hypothesized role activity scale, two sets of scalogram analyses were performed: one for children reported to have chronic limitations only (i.e., limited for more than 3 months), and another for children reporting limitations of any duration (i.e., acute, chronic, or both).[1] The physical activity and self-care categories, which were represented by only one item each, could not be subjected to scalogram analysis.

Scalogram Analyses: Ages 0-4

The hypothesized cumulative scale for role activity limitations defined four levels and ordered the items as shown in Table 31. This scale was examined in the preliminary analysis of children having one or more limitations, both for chronically limited children (N = 8) and for those with limitations of any duration (N = 11). A summary of results (including coefficients used to evaluate cumulative scales) is presented in Appendix Table B.1. Because of the small number of children having one or more role activity limitations, these tests are only preliminary and do not constitute a basis for defining a cumulative scale.

Definitions of Physical Health: Ages 0-4

For the reason just stated (i.e., insufficient sample size), dichotomous (present/absent) scores computed for those children with one or more chronic role activity limitations and for those with one or more role activity limitations of any duration have been adopted for purposes of the HIS.

The single physical activity and self-care activity items, and the very small sample of children having limitations of any duration, precluded scalogram tests. Two dichotomous scores (present/absent) were computed for physical activity and self-care activity, one for children with chronic limitations and one for children with limitations of any duration. As shown in Table 31, only four children (0.6 percent) were reported to have chronic physical activity limitations, and six (0.9 percent) had physical activity limitations of any duration. Sixteen (2.4 percent) were reported to have chronic self-care limitations, and eighteen (2.6 percent) were reported to have self-care limitations of any duration. These percentages are based on very small numbers of children with limitations and may not be borne out in studies with larger samples of functionally limited children. Therefore, the unexpected finding that the percentage of young children with self-care limitations was larger than that of children with physical activity limitations may not represent the true state of affairs.

Summary: Ages 0-4

Children aged 0-4 were assigned physical health scores based on four dichotomous measures: role activity limitations, physical activity limitations, self-care activity limitations, and a total limitations score that combined one or more limitations items across all three categories. Scores on all four measures were assigned both for chronically limited children and for children with limitations of any duration (see Table 41 for a summary of measures constructed). Although this approach ignores any differences in severity of limitations for children having one or more limitations, sample sizes were too small to scale those differences. Except for measurement error, we can be certain that children scored as limited are worse off than those scored as not limited in terms of their physical health. Thus, despite its coarseness, the dichotomous scoring method may prove useful for purposes of hypothesis testing.

SCALOGRAM ANALYSES AND DEFINITIONS OF HIS MEASURES: AGES 5-13

Hypothesized cumulative scales and items defining each level are shown in Table 32. The numbers of children with limitations were large enough to permit preliminary tests of the hypothesized scales in the physical and role activity categories, but not in the mobility category. One set of scalogram analyses was made for each of these scales (i.e., physical activity and role activity limitations) for those children with chronic limitations, and another set was made for each of the hypothesized scales involving those children limited for any duration. The Physical Activity Scales for both chronically limited children and those limited for any duration appeared reproducible, but the role activity limitations category (and the mobility category) did not meet minimum scalogram scaling criteria and were scored dichotomously (present or absent) for purposes of the HIS. In addition, based on physical health measurement findings for adults in the HIS (Stewart, Ware, Brook, et al., 1978), the single self-care activity limitation item was combined with the mobility limitations items to test an aggregate self-care/mobility limitations scale, and the physical activity, mobility, and self-care items were combined to permit examination of a more comprehensive aggregate physical health scale. These attempts to combine items into aggregate scales were not successful for several reasons; thus, for HIS analytic purposes, a dichotomous total limitations score was computed, based on one or more physical, mobility, self-care, or role activity limitations.

Scalogram Analyses: Ages 5-13

The hypothesized four-level cumulative scales for role activity limitations were not confirmed. Although there were sufficient numbers of children with role activity limitations to permit a preliminary test of this scale, the hypothesized ordering failed to meet minimum reproducibility and scalability criteria, i.e., there were too many scaling errors. A summary of results that led to this conclusion is presented in Appendix Table B.2. In general, it appeared that children who were reported as unable to go to school because of health were not necessarily limited in the kinds or amounts of schoolwork they were able to do. The reverse pattern was hypothesized. Moreoever, respondents who indicated a limitation in their children's ability to go to school, or to do certain kinds of schoolwork, did not necessarily indicate that the children were "limited in any way by health from doing anything they wanted to do." This pattern was also the opposite of our hypothesis. The role activity limitations items need to be retested in larger samples before conclusions

Table 41

SUMMARY INFORMATION ABOUT PHYSICAL HEALTH MEASURES ADOPTED FOR USE IN THE HEALTH INSURANCE STUDY

Measures[a]	Number of Items	Possible Score		Mean	Standard Deviation	Scaling Method	Meaning of a High Score
		Low	High				
Ages 0-4							
Role Activity Limitations							
Chronic limitations	3	0	1	0.016	0.13	Dichotomous score[b]	Unable to take part in ordinary play; or limited in kinds of ordinary play or from doing anything he or she wants to do.
Any limitations				0.024	0.15		
Physical Activity Limitations							
Chronic limitations	1	0	1	0.006	0.08	Single-item score	Unable to walk unless assisted by an adult or supportive devices.
Any limitations				0.009	0.10		
Self-Care Activity Limitations							
Chronic limitations	1	0	1	0.024	0.15	Single-item score	Needs help eating, dressing, bathing, or using the toilet.
Any limitations				0.027	0.16		
Total Functional Limitations							
Chronic limitations	5	0	1	0.034	0.18	Dichotomous score[b]	One or more limitations of any kind (i.e., role activity, physical activity, or self-care activity limitations).
Any limitations				0.040	0.20		
Ages 5-13							
Role Activity Limitations							
Chronic limitations	3	0	1	0.029	0.17	Dichotomous score[b]	Cannot go to school or is limited in the kinds of school work; or is limited from doing anything he or she wants to do.
Any limitations				0.046	0.21		
Physical Activity Limitations							
Chronic limitations	5	0	3	0.036	0.24	Scalogram analysis	Has trouble bending and walking one or more blocks; needs supportive devices to walk or is limited in kinds of vigorous activities.
Any limitations				0.054	0.29		
Self-Care Mobility Limitations							
Chronic limitations	5	0	1	0.007	0.08	Dichotomous score[b]	Needs help eating, dressing, or getting around the neighborhood; or must stay in bed or indoors for most or all of the day; or is limited in use of public transportation.
Any limitations				0.019	0.14		
Total Functional Limitations							
Chronic limitations	13	0	1	0.040	0.20	Dichotomous score[b]	One or more limitations of any kind (i.e., role activity, physical, self-care, or mobility limitations).
Any limitations				0.061	0.24		

[a] Scores on all measures were assigned both for chronically limited children and for children with limitations of any duration.

[b] Scored as limited if a limitation was reported on one or more items (see text).

can be drawn. Perhaps the items should be reworded to clarify the distinctions between them.

Several physical activities scales were hypothesized, including a six-level cumulative scale that ordered items as shown in Table 32. These were tested by scalogram analysis. To combine items that assessed the same functional level and thus minimize loss of information provided by a scalogram score, various combinations of the five items were evaluated. Results for the Physical Activity Scale to be used for analytic purposes in the HIS will be presented first.

By combining two pairs of items, a reproducible scale defining four levels was achieved. Item 15, which pertains to trouble walking one block, and item 16, which pertains to the use of supportive devices, were combined because they appeared to measure the same functional level (i.e., the items appeared equal in strenuousness, although they identified different kinds of functional limitations). Item 12, which pertains to limitations in vigorous activities, and item 14, which pertains to trouble bending, lifting, or stooping, were combined for the same reason. In both cases a limitation was scored when either or both item(s) were endorsed. Children with no limitations and with missing or inconsistent data on one or more of these items were excluded from the scalogram analysis. The resulting four-level scale is defined in Table 42.

Physical activity scales were also examined for two other item sequences: (1) when the five items were scored separately, as originally hypothesized in Table 32, for children with chronic limitations or limitations of any duration (see Appendix Table B.3); and (2) when items were combined at only one end of the distribution (i.e., items 12 and 14, which pertain to trouble bending, stooping, or lifting and to limitations in vigorous activities), for children with chronic physical limitations or limitations of any duration (see Appendix Table B.4). The cumulative physical activity scale defining six levels was rejected for purposes of hypothesis testing in the HIS because the measures of scalability were lower than the final scale reported in Table 42, and the hypothesized pattern was not confirmed for children with limitations of any duration. The scale defining five levels was rejected because one level contained no children and, therefore, could not be evaluated.

A cumulative four-level scale for mobility limitations was examined for children with chronic limitations (N = 7), and for those with limitations of any duration (N = 15) (see Appendix Table B.5). Item 10, which pertains to being indoors for most or all of the day, and item 11, which pertains to being in bed or in a chair for most or all of the day, were combined because they appeared to measure the same functional level. However, because of the very small number of children with mobility limitations, the scale could not be tested and will not be scored for purposes of the HIS.

A scale combining the single self-care limitation item and the mobility items was hypothesized on the basis of HIS scaling analyses for adults and adolescents; these analyses indicated that the item dealing with self-care limitations defined a more severe limitation than the items pertaining to mobility limitations and could, logically, be combined with other scale types (see Stewart, Ware, Brook, et al., 1978). A reproducible self-care/mobility scale defining five levels was examined for chronically limited children (N = 7) and for children with limitations of any duration (N = 16) (see Appendix Table B.6). As was done in the mobility analyses above, items 10 and 11 were combined after being shown empirically to measure the same

Table 42

Physical Activity Scale Defined by Scalogram Criteria for Children Aged 5-13

	Item Configurations			Chronic Limitations				Acute or Chronic Limitations			
				Scaling		Final		Scaling		Final	
Scale Score	(Item 16 or 15) Use of Supportive Devices to Walk; or Trouble Walking One Block	(Item 13) Trouble Walking Several Blocks	(Item 14 or 12) Trouble Bending, Lifting, Stooping; or Limited in Vigorous Activities	Number	Percent	Number	Percent	Number	Percent	Number	Percent
3	Yes	Yes	Yes	4	--	4	0.27	5	--	5	0.34
2	No	Yes	Yes	3	--	6[b]	0.41	6	--	11[e]	0.75
1	No	No	Yes	29	--	29[c]	1.97	39	--	42[f]	2.85
0	No	No	No	0	--	1431[d]	97.15	0	--	1412[g]	95.86
-1	Missing data	--	--	--	--	3	0.20	--	--	3	0.20
	Total			36	--	1473	100.00	50	--	1473	100.00

[a] Scalogram analyses performed only on children with one or more limitations to provide a stringent test of the scalability of the items.

[b] Contains three children with estimated scores, may be inaccurate.

[c] Contains two children with estimated scores, may be inaccurate.

[d] Contains twenty-seven children with estimated scores, probably accurate; and eight children with estimated scores, may be inaccurate.

[e] Contains five children with estimated scores, may be inaccurate.

[f] Contains six children with estimated scores, may be inaccurate.

[g] Contains twelve children with estimated scores, probably accurate; and eighteen children with estimated scores, may be inaccurate.

functional level. Again, small samples precluded definitive tests, and these scales will not be scored in the HIS.

Finally, based on HIS functional limitations analyses for adults and other adult analyses (Haber, 1970; Nagi, 1976), it was hypothesized that an aggregate physical health measure could be constructed by combining the physical activity, mobility, and self-care activity items. An advantage would be that one overall score could be computed for each child rather than a series of separate scores for each category of limitations. Also, because the scale would be cumulative, it would be possible, by knowing a child's scale score, to predict the exact pattern of limitations for that child. It was believed that the self-care/mobility limitations items define a more severe category than the physical activity limitations items, and this formed the basis for aggregating scales.

As shown in Appendix Table B.7, the hypothesized aggregate scale defining eight levels appeared to meet minimum scaling criteria for 31 chronically limited children, but not for children with limitations of any duration.

Definitions of Physical Health: Ages 5-13.

The cumulative four-level scale for Physical Activity Limitations was adopted for HIS analytic purposes (see Table 42). Analysis of chronic physical activity limitations was performed on 36 children and the analysis of limitations of any duration was performed on 50 children. Once the final scales were defined, scores were assigned to all children. This required the estimation of scores for children who did not conform to one of the perfect scale types (i.e., those who represented an error pattern in the scalogram analysis or who had missing or inconsistent data). The means and standard deviations for both the scalogram analysis and the final scale scores assigned to all children are given in Table 41. For those children having one or more chronic physical activity limitations (N = 36), the coefficient of reproducibility (CR) was 0.96 and the coefficient of scalability was 0.73.[2] For those with one or more physical activity limitations of any duration (N = 50), CR was 0.96 and CS was 0.73 (see Table 43).

Scores were assigned to children who were not perfect scale types on a case-by-case basis. Inspection of the total pattern of responses across completed items in a given scale allowed a "best guess" regarding the appropriate scale level to be assigned. Appendix Table B.8 presents scale scores assigned to children with missing or inconsistent data or error patterns. For the chronic limitations and any duration limitation Physical Activity Scales, 40 (2 with error patterns and 38 with inconsistent or missing data) and 41 (3 with error patterns and 38 with inconsistent or missing data) children, respectively, were assigned estimated scores. Table 43 presents means and standard deviations for scale scores based on Guttman Scalogram analyses for children after missing data, inconsistent data, and error patterns have been estimated.

Because the hypothesized pattern was not confirmed for the three role activity items, these items were coded so that children reported as having one or more limitations received a score of one (1) and children reported as having no limitations received a score of zero (0). Thus, two role activity scores were assigned, one for children reported as having one or more chronic activity limitations (2.9 percent) and one for children reported as having one or more activity limitations of any duration (4.6 percent).

Table 43

MEANS, STANDARD DEVIATIONS, AND SCALING COEFFICIENTS FOR PHYSICAL ACTIVITY SCALE, CHILDREN AGED 5-13

	Scaling Coefficients[a]								Chronic Limitations			Acute or Chronic Limitations		
	Chronic Limitations				Acute or Chronic Limitations									
Scale	CR	CS	MMR	N	CR	CS	MMR	N	Mean	Standard Deviation	N[b]	Mean	Standard Deviation	N[b]
Physical Activity	0.96	0.73	0.86	36	0.96	0.73	0.85	50	0.04	0.24	39	0.05	0.29	58

[a] CR = coefficient of reproducibility.
CS = coefficient of scalability.
MMR = the minimum marginal reproducibility (the minimum CR that would be obtained given the item frequencies, regardless of the scalability of the items).
N = number of children with complete data who had one or more limitations and were thus included in the scalogram analyses.

[b] Means and standard deviations are based on the total sample of children with complete data and for whom scale scores have been estimated.

Although the hypothesized cumulative self-care/mobility scale may be reproducible, a definitive test was not possible because of small sample sizes and because no children were observed at two of the five scale levels. Thus, it was decided for purposes of the HIS to score the self-care/mobility scales for children with chronic limitations and those with limitations of any duration dichotomously (one or more limitations present or absent).

Finally, we decided not to score children with functional limitations according to the aggregate limitations scale because the sample was very small and results were not consistent across groups of children having chronic limitations or limitations of any duration. For HIS purposes, it is premature to suggest that the relationship among these items is actually cumulative. It may be that children with an acute disease who are defined as immobile (e.g., confined to the home because of a contagious disease) are not necessarily limited physically (e.g., in terms of the ability to bend, stoop, lift, or walk). Hence, some of the observed "scaling errors" for children limited for any duration may reflect conceptual problems with the scale. Until larger samples of limited children are available to test the most appropriate aggregate scale for both chronic and any duration limitations, dichotomous scores will be assigned to children with one or more limitations in physical, self-care, mobility, and role activities for the HIS analytic studies.

Summary: Ages 5-13

Children aged 5-13 were assigned physical health scores based on four derived variables: Physical Activity Limitations, Role Activity Limitations, Self-Care/Mobility Limitations, and Total Limitations, which combine items across all limitations categories (i.e., physical, role, self-care, mobility). The final cumulative scales for Physical Activity Limitations were based on 5 items in which two groups of items were combined to form a four-level scale (see Table 42). The three remaining limitations measures were scored dichotomously based on those children with one or more limitations and those with no limitations. For HIS hypothesis testing, scores on all four measures were computed for chronically limited children and for children with limitations of any duration (see Table 41 for a summary of the scales and measures constructed).

Scaling Mental Health, Social Health, General Health Perceptions, and Satisfaction with Development Items

Studies of the scalability of HIS items hypothesized to measure mental and social health, general health perceptions, and satisfaction with development, using data from the Seattle, Fitchburg/Franklin County and Charleston/Georgetown County enrollment Medical History Questionnaires, concentrated on the 11 items for children 0-4 years old and on the 22 items for children 5-13 years old. Results of these studies are discussed in the following order: (1) descriptive statistics for items, (2) multitrait and factor analytic tests of item groupings hypothesized on the basis of HIS studies of mental and social health, and general health perceptions for adults, and (3) descriptive statistics for scales.

DESCRIPTIVE STATISTICS: ITEMS

Tables 44 and 45 present means, standard deviations, and the number of respondents who had missing data on each item for the combined-site samples of children 0-4 and 5-13 years old, respectively. Missing responses were very rare. Although at least 1 respondent was missing for most items in each age group, there were never more than 10 respondents missing for any item. Of 107,496 possible responses, only 448 (less than 1 percent) were missing (see Tables 46 and 47). Score distributions were skewed, with mean scores consistently on the favorable side of the midpoint. Given the assumption that scale midpoints were properly defined, this trend suggests that the HIS sample was a group of generally healthy children. A similar pattern of distributions skewed in the direction of positive health held for children in individual sites. Despite skewed responses for both the combined samples and the individual-site samples at each age level, there was sufficient item variability within hypothesized item groupings to permit summated rating scales to be tested and scored.

MULTITRAIT ANALYSIS

Initially, item groupings hypothesized to define summated ratings scales measuring an overall mental health component, a social relations component, and three general health perceptions constructs (current health, prior health, and resistance/susceptibility) for children 5-13 years old were tested by subjecting them to the criteria of multitrait scaling. Also, the three general health perception constructs, as well as a new satisfaction with (physical) development construct for children 0-4 years old, were tested in the same manner (see Tables 27 through 30).

Tables 48 and 49 present matrices of correlations (a) between the 11 general health perceptions and developmental satisfaction items and the four hypothesized scales for younger children and (b) between the 22 mental, social, and general health perceptions items and the five scales for older children. These matrices were used to perform multitrait scaling studies of hypothesized scales. Item-scale correlations, which were corrected for overlap to achieve more stringent tests, are indicated by asterisks. These asterisks also indicate the hypothesized scale placement of each item.

Two criteria were applid to these data. To satisfy the first, Likert-type criterion underlying the Method of Summated Ratings, correlations identified by asterisks should be greater than 0.30. This criterion was applied to all hypothesized scales. Inspection of coefficients identified by asterisks for hypothesized scales in Tables 48 and 49 indicates that item-scale correlations were greater than 0.30 for all but one item and exceeded 0.50 in many instances. Thus, the Likert-type criterion was satisfied for all items in all scales except one (an item in the Satisfaction with Development Scale) in both age groups (see Tables 48 and 49).

With few exceptions, item-scale correlations presented in Tables 48 and 49 also satisfied the second scaling criterion. This criterion, which pertains to item discriminant validity, requires that the correlation between an item and its hypothesized scale be higher than other correlations in the same row, i.e., those between that item and other scales constructed by using the same method. Whenever the correlation between an item and its hypothesized scale was two standard errors below

Table 44

MEANS, STANDARD DEVIATIONS, AND RESPONSE FREQUENCIES FOR SELECTED HEALTH STATUS ITEMS, CHILDREN AGED 0-4 (N=678)

Item[a]	Content	Mean	Standard Deviation	Missing	Response Values[b]				
					1	2	3	4	5
14	General health	3.53	0.57	1	2	21	270	385	--
15	Adult worry	1.83	0.85	2	278	265	105	30	--
16	Pain/distress	1.66	0.72	0	323	273	73	9	--
34A	Health excellent	4.42	0.72	2	5	12	28	283	350
34B	So sick thought die	4.42	1.24	1	58	26	12	61	521
34C	Resists illness	3.81	1.04	2	21	81	72	333	171
34D	Less healthy than others	4.33	0.98	1	14	36	58	176	394
34E	Never seriously ill	3.70	1.56	1	115	86	11	141	325
34F	Usually catches something	3.65	1.09	0	22	111	100	297	148
9	Satisfaction with growth	4.85	0.52	6	1	9	13	47	608
10	Satisfaction with eating	4.32	0.93	0	3	43	75	169	388
11	Satisfaction with sleeping	4.57	0.78	0	2	21	48	123	484
12	Satisfaction with bowels	4.56	0.81	8	5	19	53	116	485

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4.

[b] Response choices have been coded so that a high score indicates "good" health for all items except 15 and 16, where a high score indicates more worry and more pain/distress, respectively. A dash (--) indicates that a response choice was not offered.

Table 45

MEANS, STANDARD DEVIATIONS, AND RESPONSE FREQUENCIES FOR SELECTED HEALTH STATUS ITEMS, CHILDREN AGED 5-13 (N=1468)

Item[a]	Content	Mean	Standard Deviation	Missing	Response Values					
					1	2	3	4	5	6
5	General health	3.51	0.60	1	4	65	583	816	--	--
6	Adult worry[b]	1.59	0.79	0	842	428	155	43	--	--
7	Pain/distress[b]	1.53	0.71	5	864	448	140	16	--	--
55A	Health excellent	4.39	0.71	1	4	35	62	645	722	--
55B	So sick thought die	4.47	1.21	2	113	64	16	107	1168	--
55C	Resists illness	4.00	0.97	1	47	104	94	775	448	--
55D	Less healthy than others	4.39	0.95	6	29	60	135	335	909	--
55E	Never seriously ill	3.69	1.59	4	276	163	22	293	714	--
55F	Usually catches something	3.92	1.03	0	35	180	90	719	444	--
42	Child seems lonely[b]	1.70	0.82	7	705	564	162	20	12	5
43	Child seems relaxed[b]	2.19	1.11	1	356	765	171	105	33	38
44	Child enjoys things	5.09	0.81	0	9	7	59	116	858	419
45	Child seems depressed[b]	1.63	0.77	0	732	602	105	10	15	4
46	Child able to relax[b]	2.07	1.23	1	517	660	107	93	34	57
47	Child nervous[b]	1.40	0.78	1	1055	304	76	16	7	10
48	Child restless[b]	1.99	1.02	0	521	610	223	68	31	15
49	Child seems moody[b]	1.82	0.83	3	574	649	195	35	14	1
50	Child seems cheerful	4.80	0.91	2	17	17	105	193	910	226
51	Child anxious[b]	1.52	0.78	1	883	453	100	20	5	7
52	Child seems happy	4.97	0.81	3	7	13	66	151	919	312
53	Child awakes fresh	4.94	1.04	4	19	44	91	121	772	421
35	Get along with children	4.10	0.81	4	4	31	300	611	522	--
35A (36)	Get along with family	4.01	0.78	3	2	21	357	661	427	--
35B (37)	Get along with teachers	4.40	0.77	59[c]	4	20	166	443	835	--
41	Adult worry regarding social relations[b]	1.56	0.82	733[d]	453	187	71	29	--	--

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

[b] These response choices have been coded so that a high score indicates "poor" health. All other items have been coded so that a high score indicates "good" health. A dash (--) indicates that a response choice was not offered.

[c] Missing because children were not in school and thus did not respond to this question.

[d] Children who were not in school or who get along very well or quite well with teachers and classmates did not respond to this question.

Table 46

FREQUENCY AND PERCENTAGE OF MISSING RESPONSES TO ITEMS, BY HEALTH STATUS SCALE, CHILDREN AGED 0-4 (N=679)

Scale	Number of Items	Number of Responses[a]	Missing Frequency	Missing Percent
Current Health	3	2,037	5	.24
Prior Health	2	1,358	4	.29
Resistance/Susceptibility	2	1,358	4	.29
Developmental Satisfaction	4	2,716	14	.52
Chronic/Serious Illness	13	8,827	25	.28
Acute Illness/Symptoms	15	10,185	46	.45
Total	39	26,481	98	.37

[a] N = times the number of items.

Table 47

FREQUENCY AND PERCENTAGE OF MISSING RESPONSES TO ITEMS, BY HEALTH STATUS SCALE, CHILDREN AGED 5-13 (N=1473)

Scale	Number of Items	Number of Responses[a]	Missing Frequency	Missing Percent
Current Health	3	4,419	15	.34
Prior Health	2	2,946	12	.41
Resistance/Susceptibility	2	2,946	7	.24
Anxiety	5	7,365	19	.26
Depression	3	4,419	19	.43
Positive Well-Being	4	5,892	22	.37
Social Relations	3	4,419	23	.52
Chronic/Serious Illness	18	26,514	96	.36
Acute Illness/Symptoms	15	22,095	137	.62
Total	55	81,015	350	.43

[a] N = times the number of items.

Table 48

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES, CHILDREN AGED 0-4 (N=678)

Item[a]/Content		CH	PH	RS	DS
Current Health (CH)					
14	General health	.66*	.24	.37	.31
34A	Health excellent	.65*	.33	.44	.27
34D	Less healthy than others	.53*	.27	.42	.18
Prior Health (PH)					
34B	So sick thought die	.32	.37*	.27	.11
34E	Never seriously ill	.24	.37*	.24	.12
Resistance/Susceptibility (RS)					
34C	Resists illness	.49	.32	.42*	.19
34F	Usually catches something	.34	.19	.42*	.14
Satisfaction with Development (DS)					
9	Satisfaction with growth	.26	.18	.13	.27*
10	Satisfaction with eating	.19	.07	.15	.34*
11	Satisfaction with sleeping	.15	.07	.07	.39*
12	Satisfaction with bowels	.20	.08	.17	.35*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4.

*Hypothesized scales and correlations corrected for overlap.

another correlation in the same row, a "definite" scaling error was counted. Scaling "successes" were counted whenever hypothesized item-scale correlations were two standard errors higher than other correlations in the same row. When correlations between the item and other scales (those in the same row) were within two standard errors of the hypothesized scale, a "probable" scaling error was counted. In other words, there was reason to doubt whether some correlations identified by asterisks would be higher than others in the same row upon replication of the analysis. To take such marginal results into account, "probable" scaling errors were counted.

As summarized in Table 50 (for both age groups combined), only one definite scaling error was observed in 121 tests of the discriminant validity criterion. An additional six correlations were counted as probable scaling errors.

Following the demonstration of the discriminant validity of the 12 mental health items that were grouped to form the Mental Health Index, three hypothesized construct-specific mental health scales (anxiety, depression, and positive-well being) were also evaluated. Results of Likert-type analyses and discriminant validity tests, using these more differentiated categories of mental health constructs, are given in Table 51 for the combined-site sample of children aged 5-13 (mental and social health were not measured in younger children). Inspection of coefficients identified by asterisks in Table 51 indicates that the item-scale correlations for construct-specific measures were again greater than 0.30 in all instances and exceed 0.50 in most cases. Thus, the Likert-type criterion was satisfied for the seven construct-specific scales.

Once again, with some exceptions, item-scale correlations satisfied the discriminant validity criterion (see Table 51). As summarized in Table 52 (combined for both

Table 49

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES (INCLUDING ONE MENTAL HEALTH SCALE), CHILDREN AGED 5-13 (N=1468)

Item[a]	/Content	CH	PH	RS	MHI	SR
Current Health (CH)						
5	General health	.61*	.24	.41	.25	.11
55A	Health excellent	.59*	.27	.42	.29	.17
55D	Less healthy than others	.45*	.26	.47	.20	.06
Prior Health (PH)						
55B	So sick thought die	.29	.41*	.20	.11	.05
55E	Never seriously ill	.25	.41*	.23	.14	.08
Resistance/Susceptibility (RS)						
55C	Resists illness	.53	.25	.43*	.22	.11
55F	Usually catches something	.40	.20	.43*	.20	.08
Mental Health Index (MHI)						
42	Child seems lonely	.17	.13	.15	.49*	.35
43	Child seems relaxed	.19	.09	.12	.53*	.32
44	Child enjoys things	.16	.06	.18	.58*	.38
45	Child seems depressed	.22	.08	.17	.58*	.34
46	Child able to relax	.21	.09	.17	.50*	.26
47	Child nervous	.20	.08	.17	.55*	.28
48	Child restless	.13	.08	.17	.55*	.40
49	Child seems moody	.17	.08	.13	.58*	.33
50	Child seems cheerful	.22	.10	.16	.63*	.38
51	Child anxious	.19	.10	.16	.59*	.30
52	Child seems happy	.22	.10	.18	.70*	.44
53	Child awakes fresh	.27	.13	.20	.48*	.23
Social Relations (SR)						
35	Get along with children	.12	.06	.09	.41	.68*
35A (36)	Get along with family	.09	.06	.14	.45	.61*
35B (37)	Get along with teachers	.12	.07	.06	.43	.63*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

*Hypothesized scales and correlations corrected for overlap.

Table 50

SUMMARY OF DISCRIMINANT VALIDITY SCALING SUCCESSES FOR SIX HEALTH STATUS SCALES, COMBINED SAMPLE AND THREE SITES, CHILDREN AGED 0-4 AND 5-13

Scale	Number of Items	Combined Sample (N=679; 1473)[a]	Seattle (N=300; 604)	Fitchburg/ Franklin County (N=149; 371)	Charleston/ Georgetown County (N=229; 439)
Current Health	3[b]	20/21[c]	19/21	19/21	18/21
Resistance/Susceptibility	2[b]	10/14[d]	11/14	9/14	4/14[d]
Prior Health	2[b]	13/14	14/14	9/14	4/14
Mental Health Index	12[e]	48/48	48/48	48/48	47/48
Social Relations	3[e]	12/12	12/12	12/12	12/12
Satisfaction with Development	4[f]	11/12	5/12	8/12	11/12
Totals across scales		114/121	109/121	105/121	96/121

[a] Ages 0-4 and 5-13, respectively.

[b] Ages 0-4 and 5-13 combined for analyses.

[c] Read table as follows: 20 out of 21 times the item met the discriminant validity criterion (i.e., only one probable or definite scaling error).

[d] One definite scaling error is included in this scale.

[e] Ages 5-13 only.

[f] Ages 0-4 only.

Table 51

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES (INCLUDING THREE MENTAL HEALTH SCALES), CHILDREN AGED 5-13 (N = 1468)

	Item[a]/Content	CH	PH	RS	ANX	DEP	PWB	SR
Current Health (CH)								
5	General health	.61*	.24	.41	-.21	-.20	.25	.11
55A	Health excellent	.59*	.27	.42	-.25	-.23	.28	.17
55D	Less health than others	.45*	.26	.47	-.19	-.16	.18	.06
Prior Health (PH)								
55B	So sick thought die	.29	.41*	.20	-.10	-.09	.09	.05
55E	Never seriously ill	.25	.41*	.23	-.11	-.12	.13	.08
Resistance/Susceptibility (RS)								
55C	Resists illness	.53	.25	.43*	-.21	-.16	.21	.11
55F	Usually catches something	.40	.20	.43*	-.18	-.17	.19	.08
Anxiety (ANX)								
43	Child seems relaxed	-.19	-.09	-.12	.49*	.38	-.50	-.32
46	Child able to relax	-.21	-.09	-.17	.44*	.34	-.48	-.26
47	Child nervous	-.20	-.08	-.17	.52*	.48	-.42	-.28
48	Child restless	-.13	-.08	-.17	.47*	.51	-.45	-.40
51	Child anxious	-.19	-.10	-.16	.54*	.54	-.47	-.30
Depression (DEP)								
42	Child seems lonely	-.17	-.12	-.15	.44	.48*	-.40	-.35
45	Child seems depressed	-.22	-.08	-.17	.52	.56*	-.47	-.34
49	Child seems moody	-.17	-.08	-.14	.52	.48*	-.52	-.34
Positive Well-Being (PWB)								
44	Child enjoys things	.16	.06	.18	-.53	-.41	.55*	.38
50	Child seems cheerful	.22	.10	.16	-.53	-.48	.63*	.38
52	Child seems happy	.22	.10	.19	-.60	-.55	.69*	.44
53	Child awakes fresh	.27	.13	.20	-.43	-.39	.44*	.23
Social Relations (SR)								
35	Get along with children	.12	.06	.09	-.36	-.37	.36	.68*
35A (36)	Get along with family	.09	.06	.14	-.38	-.37	.42	.61*
35B (37)	Get along with teachers	.12	.07	.06	-.39	-.36	.37	.63*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

* Hypothesized scales and correlations corrected for overlap.

Table 52

SUMMARY OF DISCRIMINANT VALIDITY SCALING SUCCESSES FOR EIGHT HEALTH STATUS SCALES, COMBINED SAMPLE AND THREE SITES, CHILDREN AGED 0-4 AND 5-13

Scale	Number of Items	Combined Sample (N=679; 1473)[a]	Seattle (N=300; 604)	Fitchburg/ Franklin County (N=149; 371)	Charleston/ Georgetown County (N=229; 439)
Current Health	3[b]	26/27[c]	25/27	25/27	25/27
Resistance/Susceptibility	2[b]	14/18[d]	15/18	13/18	4/18[d]
Prior Health	2[b]	17/18	18/18	13/18	8/18
Anxiety	5[e]	24/30	19/30	24/30	19/30[d]
Depression	3[e]	14/18	13/18	12/18	12/18
Positive Well-Being	4[e]	21/24	19/24	20/24	20/24
Social Relations	3[e]	18/18	18/18	18/18	18/18
Satisfaction with Development	4[f]	11/12	5/12	8/12	11/12
Totals Across Scales		145/165	132/165	133/165	117/165

[a] Ages 0-4 and 5-13, respectively.

[b] Ages 0-4 and 5-13 combined for analyses.

[c] Read table as follows: 26 out of 27 times the item met the discriminant validity criterion (i.e., only one probable or definite scaling error).

[d] One definite scaling error is included in this scale.

[e] Ages 5-13 only.

[f] Ages 0-4 only.

age groups), one definite scaling error was observed in 165 tests of discriminant validity. An additional 19 correlations indicated probable scaling errors. Social relations and current health items scaled best; most errors involved construct-specific mental health (anxiety and depression) and resistance/susceptibility items.

MULTITRAIT SCALING RESULTS

Inspection of the pattern of item-scale correlations helps to provide a better understanding of the constructs and items that are poorly defined in these hypothesized categories. For example, all anxiety items tended to overlap as much with the Positive Well-Being and Depression Scales as with the Anxiety Scale (see Table 51). Errors involving the anxiety items occurred because the correlations of positively worded anxiety items with the Positive Well-Being Scale and of negatively worded anxiety items with the Depression Scale were higher than they were with the Anxiety Scale. The number and magnitude of the errors were nearly as great for depression items, suggesting that respondents had difficulty discriminating between these mental health constructs, or that these symptoms tend to occur together (see, for example, Achenbach, 1978; Achenbach and Edelbrock, 1979).

Thus, there were more errors in the tests of discriminant validity when Anxiety, Depression, and Positive Well-Being Scales were analyzed separately from the overall Mental Health Index; however, the number of errors seemed small enough to justify scoring the construct-specific mental health scales for further HIS validity analyses.

Generally similar Likert-type and discriminant validity findings emerged from the site-by-site analyses involving all scales, including construct-specific mental health scales (see Tables 50 and 52, and Appendix Tables B.9 through B.17). In the specific sites, most items met the Likert-type criterion (exceptions were prior health and resistance/susceptibility items in South Carolina and satisfaction with development items in Seattle). Discriminant validity test errors ranged from zero percent definite and 20 percent probable in Fitchburg/Franklin County to 1 percent definite and 25 percent probable in Charleston/Georgetown County. Inspection of item-scale correlation matrices for each age group indicated that although Charleston/Georgetown County produced the most errors (primarily among prior health, anxiety, resistance/susceptibility and depression items), each site produced similar error patterns on Anxiety, Depression, Resistance/Susceptibility, and other scales to contribute to combined-site sample error patterns.

FACTOR ANALYSIS OF ITEMS

Correlations among items were factor analyzed separately for children 0-4 and 5-13 years old to test for unhypothesized item groupings (factors) that could not be identified during the multitrait scaling studies previously described. Results of the rotated factor solutions for each age group in a combined sample (across sites) are given in Appendix Tables B.18 and B.19.

Four factors having eigenvalues greater than unity were extracted from the correlation matrix containing 13 items for children aged 0-4; these factors were rotated to orthogonal simple structure. In general, the pattern of rotated factor loadings strongly supported the hypothesized item groupings that were evaluated during the multitrait scaling studies. Specifically, no unhypothesized factors were derived, and items tended to correlate highest with scales as defined in the multitrait scaling studies (i.e., factors corresponding to the General Health, Prior Health, Resistance/Susceptibility, and Satisfaction with Development Scales were derived).

Some noteworthy exceptions to the hypothesized scale placement of certain items were, however, apparent in the factor analyses for children 0-4 years old, and information about two items not included in multitrait scaling studies was gained. For the most part, the exceptions were noted during previous discussions of the multitrait scaling results. The item pertaining to satisfaction with growth correlated substantially with both the general health and satisfaction with development factors. This finding suggests that growth, more than the other development items, is directly related to ratings of health in general. Also, the item pertaining to the child's health in relation to that of other children correlated much higher with resistance/susceptibility items than it did with the general health items. Thus, it appears that parents base such comparisons substantially on the resistance of their children to illnesses. Finally, two items that assessed adults' worry about the health of their children and parents' assessment of children's pain/distress, which were not included in the multitrait scaling studies, clearly correlated highest with the general health factor.

Correlations among 25 items fielded to measure health status for children 5-13 years old were also factor analyzed to test for unhypothesized factors in that age group. Six factors, which is one less than the number of hypothesized scales, were judged to be important[3] and were rotated to orthogonal simple structure (see Appendix Table B.19). Despite the difference in number of factors and hypothesized scales, the rotated factor solution substantially supported the hypothesized scales and was consistent with conclusions based on the multitrait scaling studies. Specifically, factors interpreted as dimensions of current health, resistance/susceptibility, prior health, positive well-being, anxiety/depression, and social relations were derived. There was only one major difference observed between the hypothesized scales and the factor analytic results, i.e., only one major difference was observed between Table 51 (presented in the multitrait scaling section) and Table B.19 (in Appendix B). Items hypothesized to measure depression and anxiety correlated highest with the same factor as opposed to defining two distinguishable factors. This finding also occurred in multitrait scaling, as discussed previously.

Two other factor analytic results observed for children 5-13 years old corresponded to those observed in the analyses of data for children 0-4 years old. First, the items pertaining to adult worry about the child's health and the child's pain/distress correlated highly with current health items in a general health factor. Second, contrary to our hypothesis, the item comparing the child's health with that of other children correlated higher with the resistance/susceptibility factor than with general health. Finally, the factor analysis also raised questions (noted in the multitrait scaling studies) about whether the two positively worded anxiety items (i.e., "able to relax" and "child seems relaxed") might be better placed in a scale to measure positive well-being than in one constructed to measure anxiety.

CONSTRUCTION OF SCALES

Following discriminant validity and factor analytic studies, scores for each summated ratings scale were computed for each child by using the simple algebraic sum of scores for items. Because of the methods used to select items for each scale and the results obtained, it was not necessary to standardize or weight items for differences in variability or the extent to which they measure the scale construct. Generally, items in each scale measured the construct defined by the scale more than they measured other constructs, and they measured that construct to about the same extent. Thus, each item contributed approximately the same amount to the scale score.

DESCRIPTIVE STATISTICS: SCALES

Means and standard deviations for scores computed from each health status scale, the Mental Health Index, and the General Health Ratings Index for the combined-site samples in each age group are given in Tables 53 and 54. As can be seen from these tables, the goal of roughly normally distributed scores was not achieved for any of the scales. All scale means were well above or below the midpoints of the scale ranges (see Table 40 for direction of scoring), indicating a generally healthy population of children. Variability was sufficient, however, to test hypotheses by using scales as the units of analysis. This is indicated by the standard deviations' being no smaller than one-seventh of each scale range. Means and standard deviations for scale scores in each site for both age groups are given in Appendix Tables B.20 through B.25 and were similar to those for the combined-site samples (in both age groups).

Table 53

MEANS AND STANDARD DEVIATIONS FOR SELECTED HEALTH STATUS SCALES, COMBINED SAMPLE, CHILDREN AGED 0-4 (N=678)

Scale	Possible Scores		Scale Midpoint	Mean	Standard Deviation
	Low[a]	High			
Current Health	3	14	8.5	12.29	1.89
Prior Health	2	10	6.0	8.12	2.33
Resistance/Susceptibility	2	10	6.0	7.46	1.79
General Health Ratings Index[b]	7	34	20.5	27.87	4.59
Satisfaction with Development	4	20	12.0	18.30	2.01

[a] Lowest possible score is equal to the number of items in the scale.

[b] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

Table 54

MEANS AND STANDARD DEVIATIONS FOR SELECTED HEALTH STATUS SCALES, COMBINED SAMPLE, CHILDREN AGED 5-13 (N=1468)

Scale	Possible Scores		Scale Midpoint	Mean	Standard Deviation
	Low[a]	High			
Current Health	3	14	8.5	12.29	1.77
Prior Health	2	10	6.0	8.16	2.36
Resistance/Susceptibility	2	10	6.0	7.93	1.69
General Health Ratings Index[b]	7	34	20.5	28.38	4.46
Anxiety[c]	5	30	17.5	9.17	3.42
Depression[c]	3	18	10.5	5.14	1.90
Positive Well-Being	4	24	14.0	19.80	2.75
Mental Health Index[d]	12	72	42.0	61.48	7.05
Social Relations	3	15	9.0	12.54	1.98

[a] Lowest possible score is equal to the number of items in the scale.

[b] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

[c] Scored such that a high score equals more anxiety or depression.

[d] Total score across all components of mental health: anxiety, depression, and positive well-being.

RELIABILITY

Internal-consistency reliability estimates and homogeneity coefficients (i.e., average inter-item correlation) for scales for the combined-site samples are summarized in Tables 55 and 56, and for each site, in Appendix Tables B.26 through B.31. In the combined sample for each age group, all scale scores were sufficiently reliable for group comparisons (0.50), and the homogeneity coefficient for all except one exceeded 0.30. In the site-by-site analyses, reliability estimates were generally lower for Charleston/Georgetown County samples; Resistance/Susceptibility and Prior Health Scales did not meet minimum reliability standards in either age group in that site. Also, the reliability estimate for the Satisfaction with Development Scale was below 0.50 in Seattle. Homogeneity estimates were below 0.30 for several scales in Charleston/Georgetown County and for one scale in each of the other sites (see Appendix B, Tables B.26 through B.31). The reliability coefficients for each scale in each site, however, were higher than would have been achieved with single-item measures of the same construct. Moreover, the reliability of general health perceptions and mental health measures, compared with individual constructs such as prior health or depression, was increased substantially for the combined samples and in each site by using the longer General Health Ratings Index and Mental Health Index.

Table 55

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SELECTED HEALTH STATUS SCALES, COMBINED SAMPLE, CHILDREN AGED 0-4 (N=678)

Scale	Number of Items (k)	Homogeneity[a]	Reliability[b]
Current Health	3	.50	.75
Prior Health	2	.36	.53
Resistance/Susceptibility	2	.42	.59
General Health Ratings Index[c]	7	.32	.77
Satisfaction with Development	4	.23	.54

[a] Average inter-item correlation.

[b] Internal-consistency reliability for scale of length k.

[c] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

Table 56

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SELECTED HEALTH STATUS SCALES, COMBINED SAMPLE, CHILDREN AGED 5-13 (N=1468)

Scale	Number of Items (k)	Homogeneity[a]	Reliability[b]
Current Health	3	.44	.70
Prior Health	2	.40	.57
Resistance/Susceptibility	2	.43	.60
General Health Ratings Index[c]	7	.32	.76
Anxiety	5	.34	.72
Depression	3	.43	.69
Positive Well-Being	4	.45	.77
Mental Health Index[d]	12	.35	.87
Social Relations	3	.56	.80

[a] Average inter-item correlation.

[b] Internal-consistency reliability for scale of length k.

[c] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

[d] Total score across all components of mental health: anxiety, depression, and positive well-being.

Validity of Health Status Measures

Two types of evidence were evaluated in studying the validity of HIS health status measures for children; content validity and construct validity.

CONTENT VALIDITY

Studies of content validity determine how well a set of measures represents the universe of content included in an operational definition. Content validity of HIS health status measures was studied at two levels: (1) face validity (did items appear to describe the construct they were intended to measure?) and (2) representativeness of items in each scale in relation to the universe of physical, mental, and social health, and general health ratings constructs (were all important aspects of each health construct well represented?).

To evaluate face validity, each item was reviewed by the authors of this report to determine whether it appeared to measure what it was intended to measure; e.g., were words such as "depressed," "downhearted," and "blue" relevant descriptors of depression? The face validity of all items in each of the scales was judged to be adequate.

Evaluation of content validity was also pursued in view of the goals of health status measurement in the HIS. HIS items were not intended to represent all categories of children's health as defined in the literature. For example, with respect to mental health, measurement of severe psychological disorders, which occur relatively infrequently or for which present medically oriented therapies are largely ineffectual (e.g., autism, childhood schizophrenia, antisocial behavior) was judged inappropriate for the HIS. These and other criteria (outlined in Chapter 1) resulted in emphasis on psychological manifestations of mental health characterized by anxiety and depression. Thus, items measuring the extent of these disorders were emphasized during analyses of the content validity of the HIS mental health measures for children. The negatively worded Anxiety Scale and Depression Scale items are similar to those found in the children's mental health literature, although other investigators' measures emphasize behavioral manifestations of anxiety and depression to a greater extent than do HIS measures. The HIS items representing positive states and well-being do not have counterparts in the general population mental health measures reviewed.

Items in the HIS physical health scales for children clearly assess the five major categories (physical, role, self-care, leisure activities, and mobility) that are most often used to define functional limitations for children (and adults). They are similar in specific content to functional limitations items developed for children and adults by other investigators and to items used for persons aged 14 and older in the HIS that also had been evaluated carefully for content validity.

The HIS Social Health Scale contains items that pertain to children's social relationships and are generally representative of social relations content in other investigators' social or mental health measures for children. However, because children's social health was less researched and not as well understood as other health components at the time HIS measures were developed, an aspect (dimension) defined in terms of the quantity, breadth, and quality of children's social participation and activities (e.g., number of friends, clubs, or activities, types of activities, how good at activities, etc.) was not included; similar social health measures are collected for adults in the HIS, however. Finally, the content of general health ratings is far more comprehensive for children in the HIS than in other general population studies. Specific content includes the usual health rating in terms of "excellent," "good," "fair," or "poor" health of the child, but it also includes items pertaining to parental perceptions of the child's prior and current health, and his or her resistance or susceptibility to illness.

CONSTRUCT VALIDITY

Results regarding the construct validity of physical health, mental health, social relations, general health ratings, and satisfaction with development measures for the combined-site samples of children aged 0-4 and 5-13 are given in Tables 57 and 58 and in Appendix Tables B.32 and B.33.

Associations Among Measures

All associations were in the hypothesized direction (see Table 40). Almost all gamma coefficients were statistically significant. Several associations among measures were moderately high (< 0.40), indicating substantial relationships. These coefficients represent lower-bound estimates of associations because all were certain to have been attenuated (because of lack of perfect reliability).

Pattern and Magnitude of Associations Among Health Components

Having established that the directions of associations were as hypothesized, the median values of the gamma coefficients for the various health components were compared in light of hypotheses relevant to validity (see Table 59). As expected, for the combined sample of younger children, the three general health ratings scales were well related (median gamma = 0.34). The three dichotomous physical health measures for the chronically limited were highly interrelated (median gamma = 0.92), as were the three measures of limitations lasting any duration (median gamma = 0.80) (see Appendix Table B.32). For the combined sample of older children, the three mental health scales were substantially related (median gamma = 0.56) and the three general health ratings scales were well related (median gamma = 0.37). The three physical health measures for the chronically limited were almost perfectly interrelated (median gamma = 0.98), as were the three physical health measures for those with limitations of any duration (median gamma = 0.96) (see Appendix Table B.33). For both age groups, the very high physical health associations suggest that children with limitations in one area (e.g., physical activities) were also likely to have limitations in another area (e.g., role activities). For this reason, and to maximize the number of children with physical impairments in the validity studies, the dichotomous total limitations (of any duration) score for each age group was used to assess the patterns and magnitudes of associations among health components in the following analyses.

For children aged 0-4, the median association between the general health ratings scales and the functional limitations measure was moderate (median gamma = 0.36). The relationship between the functional limitation measure and the Satis-

Table 57

GAMMA ASSOCIATIONS AMONG HEALTH STATUS SCALES AND VALIDITY VARIABLES FOR CHILDREN AGED 0-4

Scale	CH	RS	PH	PN	GHI	DS	FL	CI	AI	AW	ACH	AMH	OACH	OAMH
Current Health (CH)														
Resistance/Susceptibility (RS)	.47[a]													
Prior Health (PH)	.34	.34												
Pain (PN)	-.42	-.32	-.31											
General Health Ratings Index (GHI)	(b)	--	--	-.39										
Satisfaction with Development (DS)	.28	.19	.16	-.28	.22									
Functional Limitations (FL)	-.56	-.36	-.52	.67	-.59	-.48								
Chronic/Serious Illness (CI)	-.34	-.27	-.33	.39	-.35	-.24	.70							
Acute Illness/Symptoms (AI)	-.30	-.26	-.24	.45	-.30	-.29	.38	.31						
Adult Worry (AW)	-.48	-.30	-.26	.74	-.38	-.33	.63	.36	.37					
Adult Current Health (ACH)	.24	*.11*	.16	*-.13*	.19	.17	-.26	*-.09*	-.18	-.16				
Adult Mental Health (AMH)	.17	*.10*	.13	*-.11*	.14	.17	*-.10*	*-.14*	-.18	-.22	.31			
Other Adult Current Health (OACH)	.14	*.07*	*.07*	*-.13*	*.10*	*.11*	-.24	*-.05*	*-.13*	*-.12*	.20	.17		
Other Adult Mental Health (OAMH)	*.12*	*.00*	*.04*	*-.13*	*.06*	*.10*	-.29	*-.05*	*-.11*	*-.11*	*.09*	.23	.35	

[a] All coefficients are significant at $p < .05$ except those in italics.

[c] Associations between components of the index and the overall index were not computed.

Table 58

GAMMA ASSOCIATIONS AMONG HEALTH STATUS SCALES AND VALIDITY VARIABLES FOR CHILDREN AGED 5-13

Scale	CH	RS	PH	PN	GHI	A	D	PWB	MHI	SR	FL	CI	AI	AWS	AW	ACH	AMH	OACH
Current Health (CH)																		
Resistance/Susceptibility (RS)	.55[a]																	
Prior Health (PH)	.37	.32																
Pain (PN)	-.52	-.41	-.26															
General Health Ratings (GHI)	(b)	--	--	-.43														
Anxiety (A)	-.24	-.21	-.13	.30	-.20													
Depression (D)	-.23	-.20	-.13	.33	-.19	.56												
Positive Well-Being (PWB)	.29	.24	.17	-.30	.24	-.58	-.56											
Mental Health Index (MHI)	.27	.23	.15	-.32	.22	--	--	--										
Social Relations (SR)	.16	.13	.11	-.24	.13	-.36	-.38	.39	.40									
Functional Limitations (FL)	-.56	-.41	-.42	.68	-.53	.38	.24	-.25	-.32	-.20								
Chronic/Serious Illness (CI)	-.34	-.28	-.24	.41	-.32	.19	.19	-.17	-.18	*-.08*	.52							
Acute Illness/Symptoms (AI)	-.28	-.30	-.16	.49	-.26	.22	.28	-.24	-.26	-.14	.34	.29						
Adult Worry Regarding Social Relations (AWS)	-.11	-.12	*-.06*	.31	-.10	.42	.48	-.42	-.46	-.63	.19	*.09*	.14					
Adult Worry (AW)	-.60	-.41	-.30	.85	-.48	.30	.28	-.29	-.30	-.18	.72	.43	.40	.30				
Adult Current Health (ACH)	.34	.21	.14	-.19	.24	-.16	-.16	.16	.16	.12	-.23	-.11	-.14	-.13	-.21			
Adult Mental Health (AMH)	.20	.14	.09	*-.10*	.15	-.20	-.21	.23	.23	.20	-.11	-.11	*-.09*	-.25	-.14	.36		
Other Adult Current Health (OACH)	.22	.14	.09	-.14	.16	*-.05*	*-.06*	*.08*	*.06*	*.07*	-.12	*-.10*	*-.10*	-.06	-.17	.25	.17	
Other Adult Mental Health (OAMH)	.16	.11	*.08*	-.16	.14	-.10	-.11	.15	.12	.12	-.19	*-.02*	-.12	-.12	-.17	.14	.28	.35

[a] All coefficients are significant at $p < .05$ except those in italics.

[b] Associations between components of the index and the overall index were not computed.

faction with Development Scale was substantial (gamma = 0.48). For older children, the physical health measure had a higher correlation with the general health ratings scales (median gamma = 0.42) than with either the mental health scales (median gamma = 0.25) or the Social Relations Scale (gamma = 0.20) (see Table 59).

The median association between general health ratings scales and mental health scales, however, was smaller (median gamma = 0.21) than associations between the mental health scales and the Social Relations Scale (median gamma = 0.38), and it was in the same range as the associations between the mental health scales and the functional limitations measure (median gamma = 0.25). Associations between general health ratings scales and the Social Relations Scale (median gamma = 0.11) were (1) somewhat lower than the association between the Social Relations Scale and the physical health measure (gamma = 0.20) and (2) much lower than the association between the Social Relations Scale and the mental health scales (median gamma = 0.38) (see Table 59).

Table 59

ASSOCIATIONS AND MEDIAN ASSOCIATIONS (GAMMA) AMONG THE HEALTH STATUS COMPONENTS, CHILDREN AGED 0-13

Components	A	B	C	D
Ages 0-4				
(A) Functional Limitations[a]	(b)			
(B) General Health Ratings	.36	.34[c]		
(C) Satisfaction with Development	.48	.19	(b)	
Ages 5-13				
(A) Functional Limitations[a]	(b)			
(B) General Health Ratings	.42	.37[c]		
(C) Mental Health	.25	.21	.56[c]	
(D) Social Relations	.20	.11	.38	(b)

[a] For purposes of these validity analyses, the dichotomous functional limitations score, which was based on the presence or absence of limitations of any kind and duration, was used. The relationships among the components of physical health for children 0-4 years old (median gammas = .92 and .80, respectively, for measures of chronic and any duration limitations) and for children 5-13 years old (median gammas = .98 and .96, respectively, for measures of chronic and any duration limitations) were strong enough so that validity analyses using the single, overall, functional limitations score can be considered highly representative of all physical health measures.

[b] Median associations were not computed for scales with only one component.

[c] Coefficients represent median gammas among the same health components.

INTERRELATIONSHIPS AMONG HEALTH STATUS COMPONENTS

The general health ratings scales overlap more with physical health (i.e., functional limitations) than they do with aspects of mental and social health, such as anxiety, depression, positive well-being, and getting along with others. In addition, mental health scales and the Social Relations Scale overlap substantially. These results support the considerable overlap in content found in measures of children's mental and social health in the literature reviewed (e.g., Achenbach, 1978); they also suggest that parents may not be including the concepts of mental health and social relations (social health) in their conception of health when they are asked to rate their children's general health status.

OTHER VALIDITY ANALYSES

Results of multiple regression analysis carried out to assess the value of scoring the Anxiety, Depression, and Positive Well-Being Scales separately added support for the discriminant validity of the construct-specific mental health measures (see Table 60). To illustrate, when the physical health (i.e., the total limitations measure) and general health ratings measures (e.g., the Current Health Scale) were regressed on the Anxiety, Depression, and Positive Well-Being Scales, different scales were most predictive and more than one scale sometimes made a significant contribution to the prediction. For the functional limitations measure, the Anxiety Scale was a significant construct-specific mental health predictor; the Depression and Positive Well-Being scales were not. On the other hand, for the Current Health Scale, the Positive Well-Being scale was the most significant predictor, the Anxiety scale was next, and the Depression Scale was the least predictive, but still a statistically significant predictor (see Table 60). In these analyses, if the construct-specific scales were not scored separately, it would not have been possible to determine which dimensions of the overall Mental Health Index would be useful in predicting physical health or general health ratings.

Because of the markedly skewed score distributions for the functional limitations measures and the imperfect reliability for all measures, the estimated associations between physical health and other variables were quite attenuated. To obtain a clearer indication of differences in reported health status of children with and without functional limitations of any duration, means for each of these groups on the other health status scales and on the acute and the chronic illness counts were compared. As shown in Table 61, functionally limited children in both age groups were reported to have significantly worse health status as assessed by all measures and illness counts. Mean differences in scale scores and measures for limited versus nonlimited children were substantial (close to one standard deviation), providing further evidence of validity for the child health scales.

Parents' (or proxies') ratings of their own health status were sometimes significantly associated with the rating of the child's health status. Self-ratings of health by the adult partner who did not complete the child health questionnaire, however, were less closely related to the child's reported health status (see Tables 57 and 58). For example, the proxy and older child's (5-13) Current Health ratings were more strongly associated (gamma = 0.34) than adult partner and child's Current Health ratings (gamma = 0.22). Similarly, proxy and child's Mental Health Index (scores)

Table 60

SUMMARY OF STANDARDIZED REGRESSION COEFFICIENTS AND OVERALL F-RATIOS FOR MENTAL HEALTH AND SOCIAL RELATIONS SCALES USED TO PREDICT VALIDITY VARIABLES

		Mental Health and Social Relations Scales				
Validity Variables	N	Anxiety	Depression	Positive Well-Being	Social Relations	F
Current Health	1411	-.10*	-.08†	.20*	-.03	37.58*
Pain/Distress	1411	.16*	.10*	-.03	-.07†	35.26*
Adult Worry	1411	.18*	.08†	-.06	.01	32.86*
General Health Ratings Index	1411	-.10*	-.06	.18*	-.01	33.99*
Social Relations	1411	-.19*	-.20*	.22*	--	179.95*
Functional Limitations	1401	.22*	-.02	.02	-.03	15.31*

*p < .01. †p < .05.

Table 61

HEALTH STATUS SCALE MEANS AND STANDARD DEVIATIONS FOR CHILDREN WITH AND WITHOUT FUNCTIONAL LIMITATIONS OF ANY KIND OR DURATION

Scale	Limitations				
	None[a]	Standard Deviation	One or More[b]	Standard Deviation	t-Test Value
Ages 0-4					
Current Health	12.38	1.79	10.15	2.84	6.15*
Prior Health	8.21	2.28	6.15	2.76	4.57*
Resistance/Susceptibility	7.52	1.76	6.44	2.12	3.09*
General Health Ratings Index	28.12	4.40	22.74	6.02	6.12*
Satisfaction with Development	18.38	1.87	16.15	3.50	5.81*
Acute Illness/Symptoms	1.72	1.46	2.74	1.87	3.53*
Chronic/Serious Illness	0.33	0.59	1.07	0.92	6.19*
Ages 5-13					
Current Health	12.42	1.68	10.42	2.51	10.54*
Prior Health	8.26	2.31	6.79	2.66	5.77*
Resistance/Susceptibility	8.00	1.64	6.86	2.07	6.24*
General Health Ratings Index	28.69	4.23	24.07	5.41	9.80*
Anxiety	8.98	3.23	11.58	4.70	7.13*
Depression	5.09	1.86	5.83	2.16	3.60*
Positive Well-Being	19.88	2.65	18.61	3.46	4.32*
Mental Health Index	61.82	6.75	57.19	9.07	6.11*
Social Relations	12.55	1.90	11.69	2.80	3.92*
Acute Illness/Symptoms	1.34	1.39	2.09	1.70	4.82*
Chronic/Serious Illness	0.37	0.63	0.89	0.93	7.18*

[a] N = 644 for children aged 0-4; N = 1365 for children aged 5-13.

[b] N = 27 for children aged 0-4; N = 89 for children aged 5-13.

*$p < .01$.

were better related (gamma = 0.23) than were the nonproxy adult and child scores (gamma = 0.12). Similar patterns of results held for the various health status ratings of parents and their younger children (0-4).

Finally, correlations among 13 children's health status measures and validity variables were factor analyzed to summarize information relevant to construct validity. The two most important derived factors, in terms of variance accounted for, were rotated to orthogonal simple structure to facilitate interpretation. Correlations among measures and factors are shown in Table 62, which has been organized to make interpretations easier. First, the 13 measures have been organized by rows into two groups that correlate most highly with the same factor; the measures have also been listed in order of the absolute magnitude of their correlation (factor loading) with that factor. Second, the direction of the hypothesized association between each measure and a favorably defined health status factor is presented in parentheses in the first column. Third, communalities, which indicate the amount of variance accounted for by a two-factor solution, are presented in the right-hand column of the table.

Before discussing the results given in Table 62, some trends in the unrotated factor solution should be noted. The unrotated solution revealed a large general

Table 62

CORRELATIONS AMONG THIRTEEN HEALTH STATUS AND VALIDITY MEASURES AND ROTATED FACTORS, CHILDREN AGED 5-13

	Rotated Factors		
Measures/Hypotheses[a]	I	II	h^2[b]
Adult Worry (-)	-73[c]	-13	55
Current Health (+)	71	13	53
Pain (-)	-67	-17	48
Resistance/Susceptibility (+)	57	12	34
Acute Illness/Symptoms (-)	-42	-18	21
Functional Limitations (-)	-38	-09	15
Chronic/Serious Illnesses (-)	-38	-06	15
Prior Health (+)	36	06	14
Anxiety (-)	-24	-77	65
Positive Well-Being (+)	22	73	58
Depression (-)	-20	-72	57
Social Relations (+)	08	64	42
Adult Worry Regarding Social Relations (-)	-07	-57	33

[a] Direction of hypothesized association, with favorably defined health status factors shown in parentheses.

[b] Communality estimates, i.e., percentage of variance in each score explained by a two-factor solution.

[c] Factor loadings (with decimals omitted); may be interpreted as product-moment correlations between measures and factors.

factor that accounted for approximately 30 percent of the total possible variance (i.e., with unities in the diagonal of the correlation matrix). Correlations between the 13 measures and the general factor tended to be substantial (0.26 to 0.70, absolute magnitude); the median of the 13 correlations was approximately 0.52. This pattern of results in the unrotated matrix is consistent with a general health status construct common to all measures, as hypothesized. The fact that measures of general health perceptions (e.g., Current Health, Resistance-Susceptibility) correlated very highly (> 0.50, absolute magnitude) with the first unrotated factor further supports this interpretation.

The two-factor solution accounted for approximately 47 percent of the total measured variance in the 13 variables (approximately 32 and 15 percent for Factors I and II, respectively). The first factor appears to define a general/physical component of health status, and the second, the mental health component. Of the two kinds of construct-specific health status measures (physical and mental health) included in the matrix, the functional limitation measure tended to correlate moderately with Factor I but not with Factor II. Highest loadings on Factor I were observed for the general health measures. A moderate correlation (0.38) was observed between Factor I and the measure of chronic and serious illnesses. General health ratings (e.g., Current Health, Adult Worry about child's health) also correlated highly with Factor I. These trends support interpretation of Factor I in terms of both the general and physical aspects of health status.

Factor II appeared to define the mental dimension of health status, as hypothesized. Very high correlations (0.70 or greater) were observed between Factor II and the three hypothesized mental health measures (Positive Well-Being, Depression, Anxiety); the measure of Social Relations also correlated highly with Factor II. The correlation between Factor II and the functional limitation measure was very low, and correlations between the general health ratings and Factor II (about 0.22 or less) were lower than between the mental health measures and Factor II.

The trends noted above are consistent with interpretation of Factors I and II as general/physical and mental dimensions of health status. The pattern of results for HIS scales hypothesized to measure physical and mental health status of children strongly supports their validity in that regard. However, general ratings of health status for children appear to reflect the physical much more than the mental dimension of health status; this finding differs from results of studies of these measures for adults (Ware, Johnston, Davies-Avery, et al., 1979).

Sociodemographic Correlates of Health Status

Relationships among the health status scales and 7 demographic and socioeconomic variables are summarized in Table 63 for the sample combined across sites and ages. In general, relationships were weak. Only three gamma coefficients reached 0.20 or above, although some were statistically significant. Moreover, there were no systematic sociodemograhic relationships across scales. These findings are consistent with those reported in the literature review of health status measures.

Table 63

GAMMA ASSOCIATIONS AMONG SELECTED HEALTH STATUS SCALES AND DEMOGRAPHIC AND SOCIOECONOMIC VARIABLES, COMBINED SAMPLE[a]

	Variables						
Scale	Age	Sex[b]	Race[c]	Education of Head of Household	Family Income	Number of Children	Birth Order[d]
Current Health	.00	.02	-.37*	.18*	.21*	-.06	-.06
Resistance/Susceptibility	.14*	-.01	.00	.02	.05	.06	.01
Prior Health	.00	-.02	-.06	.12*	.15*	-.04	-.04
Anxiety	.05	.01	-.08	.03	-.02	-.03	-.11*
Depression	.02	.14*	-.15*	.03	.00	-.11*	-.14*
Positive Well-Being	-.08*	-.07	.10*	-.03	-.02	.01	.09
Social Relations	-.03	.08	.30*	.00	.00	-.04	.03
Developmental Satisfaction	-.04	.04	-.11*	.06	.14*	-.03	.03

[a] Coefficients for the anxiety, depression, positive well-being, and social relations scales are computed for children aged 5-13 only, whereas coefficients for the developmental satisfaction scales are computed for children aged 0-4 only. Thus, N's range from 1871 to 2030 for the combined 0-4 and 5-13 scales; 558 to 605 for the developmental satisfaction scale; 1266 to 1425 for mental health and social relations scales.

[b] Where sex scored 1 = boy, 2 = girl, a positive correlation indicates girls scored higher than boys on positively defined scales.

[c] Where race scored 1 = white, 2 = black and other, a positive correlation indicates blacks and others scored higher than whites on positively defined scales.

[d] Where birth order scored 1 = only/first born, 2 = later born, a positive correlation indicates later borns scored higher on positively defined scales.

*p < .05. Note that the value of a gamma coefficient required for statistical significance varies because of the probability of tied rankings in ordinal data and differing sample sizes.

Summary of His Health Status Measures For Children

PHYSICAL HEALTH

For children aged 0-4, four measures were constructed from items in the physical health battery. They represented four categories of activities: physical, self-care, and role and leisure (combined). A total limitations score, comprising all four categories, was also constructed. Leisure activities for children were conceptualized in the HIS as a major role activity only and were thus included in that category. Because of the small number of younger children with limitations of any duration, cumulative scales could not be tested. Each of the functional limitations measures was therefore scored dichotomously to identify the presence or absence of one or more limitations.

For children aged 5-13, four measures were constructed from items in the physical health battery. These measures represented five categories of activities: physical, self-care/mobility (combined), and role and leisure (combined). A total limitations score, comprising all five categories, was also constructed for older children. Only the Physical Activities Scale identified sufficient numbers of older children with limitations to permit scaling tests, and satisfied the scaling criteria. The role activities, self-care/mobility, and total limitations measures were scored dichotomously to identify the presence or absence of one or more limitations.

MENTAL HEALTH

Three summated ratings scales were constructed from the mental health battery for children aged 5-13. These measures represent three dimensions of mental health (number of items are shown in parentheses): anxiety (five), depression (three), and positive well-being (four). In addition, a twelve-item Mental Health Index that aggregates across the three dimensions was scored according to the summated ratings method. These four scales satisfied criteria of multitrait scaling. Mental health was not measured for children aged 0-4.

SOCIAL HEALTH

One social health summated-ratings scale was constructed from three items for children 5-13. This scale, which reflects interpersonal relations, met multitrait scaling criteria. No measure of social health was included for children 0-4.

GENERAL HEALTH PERCEPTIONS

Three summated ratings scales were constructed from the general health ratings items for children 0-4 and 5-13. The measures represent three dimensions of general health perceptions (number of items are shown in parentheses): prior health (two), current health (three), and resistance or susceptibility to illness (two). A seven-item General Health Ratings Index was also constructed. The eight scales (four for younger children and four for older) satisfied multitrait scaling criteria.

SATISFACTION WITH DEVELOPMENT

One Satisfaction with Development Scale based on summated ratings was constructed for children 0-4 years old. The four items, representing aspects of development, such as the child's growth, eating, sleeping, and bowel habits, for which parents might express satisfaction or concern, were scaled and met multitrait scaling criteria.

FOOTNOTES

1. Scalogram analyses were also conducted for each hypothesized scale when chronic limitations were defined as limitations present for more than 1 month. This alternative method of defining chronic limitations did not change the reliability/reproducibility or the scalability of a given set of items. Therefore, the decision was made to define chronic limitations as originally hypothesized (i.e., limited for more than 3 months).
2. CR values of 0.90 or greater were accepted as evidence of the reliability/reproducibility of a given set of items; CS values of 0.60 or greater were accepted as evidence of the scalability of a given set of items. In all analyses, reference to those values indicates that the scale met minimum standards. In analyses in which values fell below the standards, hypothesized scales were not confirmed, even if sample sizes were sufficiently large to test the scales.
3. Five factors had eigenvalues greater than unity; the sixth factor had an eigenvalue of 0.98 and was also rotated on the basis of high loadings in the unrotated solution and the results of the Scree Test (Cattell, 1966).

Chapter 5

DISCUSSION

A major purpose of the HIS initial phase was to develop, or select, outcome measures of children's health status and to test their measurement properties in a general population. Results, based on enrollment Medical History Questionnaire data, suggest that considerable progress toward this goal has been achieved.

To be most useful as outcome measures, the chosen batteries of questions about physical, mental, and social health and general health perceptions should satisfy a number of conditions. First, items should be optimally scored to reduce the number of variables as much as possible without substantial loss of information and to achieve the desired level of measurement—at least an ordinal scale. Second, score distributions should have sufficient variability to be useful in detecting differences in health for a population of generally healthy children, given a study design such as that adopted for the HIS. Third, scores should yield a sufficient amount of true score variance, i.e., they should be reliable. Fourth, scores should be valid (they should primarily reflect the health component they were intended to measure) without being excessively redundant in relation to each other or to other health variables being assessed. Fifth, the battery should be practical in terms of data-gathering costs, respondent burden, and ease of scoring and interpretation. In general, measures of health status for children selected or developed for the HIS fulfilled these conditions, and should detect changes in population-based scores consequent to different health insurance financing plans. Certain exceptions to this conclusion and some key findings warrant further discussion.

Conceptualization of Health

No comprehensive conceptualization of child, or adult, health is now available to guide selection or development of health status measures. In the absence of an overall conceptual framework, the HIS has elected to operationalize health status, based on the World Health Organization position that health includes physical, mental, and social components. Additionally, the general health perceptions component was considered a fourth factor worthy of measurement. All components were presumed to contribute significantly to overall health status; therefore instruments designed to measure each as independently as possible were sought. In principle, children's health status measures based on a comprehensive conceptualization could include these four major components (physical, mental, and social health, and general health perceptions). In practice, measures rarely appeared to reflect any conceptual or theoretical basis and they rarely included more than two components of health.

In most studies, physical health is conceptualized in terms of the child's functional status. Measures of functional status for children commonly focus on limitations in five categories of activities: self-care, mobility, physical, role, and leisure. In the HIS, we endorsed this conceptualization and selected items that represented activities in all categories except mobility for younger children (0-4). All activity categories were represented for older children (5-13).

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Most investigators have conceptualized children's mental health in terms of behavior and conduct problems (e.g., aggressive, delinquent, and hyperactive behavior). Unlike recent measures for adults that emphasize psychological manifestations and feeling states, such as anxiety, depression, and positive well-being, measures for children apparently reflect a lack of interest in assessing psychological and affective states.

Emphasis on behavior problems in conceptualizing children's mental health has probably occurred for several reasons. First, by their very nature, overt personality, acting out, and conduct problems gain attention from parents, teachers, peers, and possibly the police. These behaviors bother others and force authority figures to deal with the child, often resulting in the use of child guidance and counseling services, physicians' services, or entry to the juvenile justice system. Second, investigators have not wanted to rely on the child's self-report and apparently believe that overt, tangible behaviors—especially problem behaviors—can be reported more reliably by proxies than could psychological and affective content. Third, there is some evidence from retrospective and prospective studies that aggressive, acting out, and conduct problems in childhood and adolescence are better predictors of adult psychopathology and character disorders than are neurotic behaviors such as anxiety, depression, and social withdrawal (e.g., Kohlberg, LaCrosse, and Ricks, 1972; Robins, 1966; Rutter, 1972; Taylor and Watt, 1977). Thus, investigators have implied that screening for behavior problems is likely to identify greater numbers of children for further psychiatric or psychological evaluation, to produce greater reliability of measurement, or to better predict adult mental health disturbance or problems.

However, for several reasons to be discussed below, the behavior problem orientation to children's mental health was not incorporated in HIS measures. Instead, HIS enrollment questionnaires focused on psychological and feeling states, such as anxiety, depression, and positive well-being, similar to those assessed for adults in the HIS. Mental health was not measured for children aged 0-4; scales representing anxiety, depression, and positive well-being were developed for children aged 5-13.

In the children's health status literature, social health is not usually conceptualized as a separate health component. When represented at all, it has been included with measures of mental health. As a guide to conceptualizing children's social health, adult social health measures were reviewed. For adults in a general population, social health is assessed independently of mental health and generally pertains to interpersonal interactions and social participation in groups and activities. This orientation was adopted in the HIS and social health measures for older children focused on the quality of interpersonal relations with important persons in their environment. Social health ratings were not obtained for younger children in the HIS.

General health for children has been conceptualized as ratings of overall health in terms of excellent, good, fair, or poor, and of the health-related concern or worry about the children reported by parents. The HIS approach to general health perceptions includes the familiar general health rating, but emphasizes a more comprehensive view of health perceptions. For children in both age groups, this includes interest in their prior and current health, resistance and susceptibility to illness, and parental health-related worry about the child.

Descriptive Statistics and Statistical Power

Distributions of item scores for HIS child health measures tended to be skewed. There was sufficient variability on all items, except most of those representing physical health, to test hypothesized item groupings in the combined-site samples and individual sites.

Distributions of scores for all resulting scales were also skewed. Most children scored favorably in relation to the midpoint of the possible scale range. Despite this skewness, there was sufficient variability in score distribution on all summated ratings scales for HIS analytic purposes.

PHYSICAL HEALTH

The measures yielding the least score variability and most skewed distributions pertained to functional limitations. Because previous studies using similar questions had indicated few functionally limited children in general population surveys (e.g., NCHS, 1971b; 1977a and 1977b), very few children with severe or mild limitations attributable to health were anticipated in this general population sample. Based on aggregate indicators discussed in the literature review, between 91 and 93 percent of children under 16 in general populations appear to be without functional limitations. HIS measures yielded similar data for children aged 0-4: approximately 4 percent had one or more limitations of any duration. For children aged 5-13, approximately 6 percent had one or more limitations of any duration.

HIS prevalence estimates for functional measures and age groups that could be compared with other studies were consistent with their reported estimates. For example, role activity limitations of any duration for younger children in the HIS were virtually identical to those of children in a representative sample (approximately 2 percent limited). However, different types of activities and reporting periods included in a given conceptual scheme may yield different estimates of prevalence of limitations. Regardless of measurement methods, most children in general populations receive perfect scores when physical health is defined in terms of functional status. Thus, scores on HIS limitations measures probably do not reflect a measurement problem unique to the HIS child health battery.

Nevertheless, the precision of functional limitations measures is reduced because these impairments occur infrequently in a general population, such as that enrolled in the HIS. For example, large samples would be needed to detect treatment effects on physical health for two representative (generally healthy) groups of children who are enrolled in an experiment. Using HIS enrollment data from the total limitations (of any duration) measure as a case-in-point, and assuming a post-test only, a Type I error of 0.05 or less (one-tailed test), and a power of 0.90 (a chance probability of 0.10 or less for Type II errors), 21,500 children aged 0-4 would be required to detect a small effect (20 percent of the mean), 4800 to detect a medium effect (40 percent of the mean), and 2100 to detect a large effect (60 percent of the mean). For children aged 5-13, somewhat smaller sample sizes would be necessary: 12,400, 3100, and 1300 for 20 percent, 40 percent, and 60 percent of the mean, respectively. However, by assuming an intertemporal correlation of 0.50 between pretests and post-tests, a 25-percent reduction in required sample size could be achieved in a design such as the one used in the HIS.

It is not clear whether the addition of a symptom/problem complex list (Patrick, Bush, and Chen, 1973) to the HIS functional status measures for children would increase variability in scores enough to improve power greatly. Certainly this approach would have confounded functional status with other health constructs. The approach was also contrary to the HIS measurement strategy, which calls for separating the components of health for measurement and interpretation prior to aggregation. Patrick and his colleagues have presented no evidence that suggests that a symptom/problem complex approach increases variabilty on measures of children's health status. Moreover, many symptoms and problems are included in HIS chronic/serious illness or acute symptoms lists. To summarize, combining indices of functional status with illness measures would complicate the scoring of different components of health and change the definition of health adopted for the HIS; it would probably not increase the number (percentage) of children identified as having actual functional limitations in the general population. In other words, it would not solve the fundamental precision problem. Thus, we chose not to take that approach.

MENTAL HEALTH

HIS mental health measures were constructed to assess the general level of psychological health or well-being in a general population of children. They emphasized psychological phenomena and feeling states in terms of positive and negative well-being. In contrast, most mental health measures for children from general populations were developed as screening instruments that would yield scores above which children should receive follow-up clinical evaluation or examination to determine whether they might have a psychiatric impairment or disorder. These measures tended to focus primarily on problem behaviors rather than on psychological problems or feeling states, as, for example, depression. Thus, one cannot make meaningful comparisons between descriptive statistics for HIS scales and prevalence rates for psychiatric screening instruments. As mentioned previously, mental health scales constructed for use in the HIS were skewed in the direction of good health, but contained enough variability to allow tests of hypotheses.

SOCIAL HEALTH

Similar to findings for HIS mental health measures, the Social Relations Scale was sufficiently variable so that it could be used to conduct tests of experimental hypotheses, but it was difficult to compare this scale directly with other social relations measures reviewed. In the one item common to both the HIS and a study of a national probability sample, the percentage of children who had difficulty getting along with other children was below 5 percent in both samples.

GENERAL HEALTH PERCEPTIONS

The single general health rating item for both younger and older children in the HIS showed similar response patterns to that item for younger and older children in a national sample survey. In the HIS, approximately 3 percent of children aged 0-4 were rated in either fair or poor overall health; approximately 5 percent of those 5-13 years old were reported to be in fair or poor general health. Again, there appeared to be sufficient variability in the general health ratings items and in the general health perceptions scales (for both age groups) to warrant their use in experimental analyses.

Reliability

Reliability was estimated by using the internal-consistency method for HIS measures of mental and social health, general health, and satisfaction with development. In the combined-site samples, reliability estimates indicated sufficient true score variance for their planned use in the HIS, namely, to make group comparisons. Reliability estimates for all scales, the General Health Ratings Index, and the Mental Health Index exceeded 0.50, a recommended minimum for studies involving group comparisons (Helmstadter, 1964).

In the individual-site analyses, reliability coefficients tended to be lower for respondents in South Carolina, where the sample included a large proportion of persons disadvantaged with respect to education and income. The two least reliable scales in that site (Prior Health and Resistance/Susceptibility) contained only two items each; they should be lengthened for use in future research. Even if they are not augmented, these two-item scales are probably more reliable than single-item measures ordinarily used in child health population surveys (see Chapter 2 for examples).

Reliability estimates for the chronic limitations and limitations of any duration Physical Activities Scales for older children in the HIS were based on reproducibility coefficients. They too were satisfactory for HIS purposes. Other physical health scales that met minimum reproducibility standards were based on too few children with limitations to be considered adequate for HIS analytic purposes.

Few investigators of children's health status measures have addressed the issue of reliability . Moreover, no measures using scalogram techniques were identified, and very few measures were based on the summated ratings method; most measures were single items for which no reliability estimates were reported. For example, no study of physical health measures reported reliability estimates; one investigator reported reliability estimates (test-retest and inter-rater methods) for social health measures; and no studies reported general health ratings reliability information. For mental health measures reviewed, three groups of investigators reported reliability estimates; only one used the internal-consistency method most often associated with summated ratings scales. Given the paucity of studies of the reliability of children's health status measures, particularly those of physical and mental health, further study is strongly recommended to replicate results previously published and to generate new reliability data on existing health status measures for which estimates are unavailable.

Content and Face Validity

The face validity of all items used in the HIS health status measures for children was judged satisfactory. These judgments were based on a review of the content of each measure by physician consultants and professional staff in relation to the health component and the dimension within each component that it was intended to measure.

The content validity of HIS measures was studied by assessing their representativeness in terms of the universe of content defined by physical, mental, social health, and general health ratings identified in the literature. For example, among physical health measures, all the categories of activities limitations used in earlier child health measures were represented in the HIS items. Within specific activities categories, it was not the HIS aim to be exhaustive: thus, areas of fine motor movements, such as handwriting, were not included under physical activities. Furthermore, leisure activities were not fully differentiated from role activities for either age group, and self-care and mobility were combined for younger children (aged 0-4).

The literature review makes it clear that investigators who have developed mental health measures for children have emphasized behavioral over affective content in defining the domain of mental health. They have also mixed psychological content with behavioral, social, and physical content. Within the behavioral category, measures focus on acting out problems, such as aggression, and conduct problems, such as antisocial, delinquent, and hyperactive behaviors. When HIS measures of mental health were selected in 1974, use of measures that assess overt behavioral and acting out problems was considered but rejected. These measures were considered too sensitive, possibly resulting in questionnaire nonresponse. Moreover, such problems were not considered generally treatable within the present medical care system. There was some precedent for the decision not to include "sensitive" measures, but no empirical data (see Shepherd, Oppenheim, and Mitchell, 1971). There was also some evidence that behavior and conduct problems such as delinquency were not good candidates for traditional child psychotherapy (e.g., Bergin and Garfield, 1972).

Since the development of the mental health measures that were fielded at enrollment, thinking with respect to including behavior problem items in HIS mental health batteries has changed for several reasons. First, there still does not appear to be empirical evidence suggesting that behavior problem measures included in health surveys lead to increased nonresponse or to lack of respondent cooperation. Second, trends toward psychological-orientation observed for adult mental health measures are generally absent from children's measures. Third, encouraging reports in the clinical literature indicate that an increasing number of behavior modification and management approaches and techniques are successful for children with certain types of hyperactivity, conduct, and acting out problems (e.g., Patterson, Reid, Jones, et al., 1975; Wahler, 1976; Hersen, 1977a and 1977b, 1978).

As a result of these findings, a fifteen-item battery relating to behavior and conduct problems has been added to HIS annual health questionnaires fielded after the fall of 1978 (see Appendix E). The items were adapted from Achenbach's Child Behavior Checklist (Achenbach, 1978) and were selected to represent consistently high loading items across his age and sex groups in the following categories: aggressive behavior (four), delinquent behavior (four), hyperactive behavior (three), and social withdrawal (four). Together with the anxiety, depression, and positive well-being items from the HIS enrollment Mental Health Batteries for children, these high loading items should represent the major mental health dimensions described in the literature and provide a more comprehensive mental health battery for use in general populations of children, such as those involved in the HIS.

In the literature, social health measures for children represented two main content areas: (1) interpersonal relations and (2) social activities and participation. In the HIS, social health was operationally defined in terms of the child's ability to get along with significant others, including other children, family, teachers, and classmates. The amount and quality of the child's participation in social activities and groups was not assessed at enrollment. Some information will be obtained from the social withdrawal items added by the new behavior problem battery discussed above.

Finally, assessment of the representativeness of measures of general health ratings suggests that the HIS battery is much more comprehensive than the single items usually fielded in health surveys for children. In the HIS, the child's prior and current health, resistance/susceptibility to illness, amount of pain attributed to health, and parental worry or distress about the child's health are assessed in addition to a general health rating, which is rated in terms of excellent, good, fair, or poor health.

Construct Validity

Three types of construct validity studies were performed on HIS health status measures for children: (1) studies of associations within measures of health components, i.e., within mental health and within general health perceptions; (2) studies of associations among measures of physical, mental, and social health and general health perceptions; and (3) studies of associations among health status measures and other health and health-related variables. Some construct validity studies were designed to test specific hypotheses; others—those relating health status measures to sociodemographic variables—attempted to extend theory.

Generally, studies of all three types supported the proposed multicomponent model of child health and the construct validity of HIS measures. The patterns of associations were as hypothesized; several associations were substantial; and results were consistent with the objective that each scale reflect primarily one health component, such as mental health or social health, or multiple components, such as general health perceptions. Thus, for both younger (0-4) and older (5-13) children, the three general health rating scales are well related and the three mental health scales for older children are substantially related. Moreover, when the three mental health scales are scored separately, they are more strongly associated with each other than they are to social relations or general health ratings; and when the three general health rating scales are scored separately, they are related to more than one component of health status for each age group, as hypothesized. Relationships among the mental and general health rating scales and the other health-related variables, such as chronic/serious illnesses, were strong enough for one to conclude that the scales do measure health status and weak enough to indicate that construct-specific scales are likely to contribute unique information about health. In other words, these construct-specific scales are not excessively redundant.

Furthermore, regression analyses demonstrated the value of separately scoring and interpreting the construct-specific mental health scales (in addition to the Mental Health Index). The most predictive scales differed, depending on the health status construct employed as the validity variable. The meaning of differences between groups in Mental Health Index scores can only be properly understood when construct-specific scales are scored and interpreted separately. Thus, despite the scaling errors that raised doubts about conceptual distinctions between mental health constructs, scaling attempts were sufficiently successful to warrant scoring Anxiety, Depression, and Positive Well-Being Scales separately, for the present. If these conceptual and statistical distinctions do not prove to be clinically meaningful in subsequent validity studies, scores on the Mental Health Index alone will be used in HIS analyses.

These findings with respect to interrelationships have special implications for child health measurement theory and for the construct validation approach to studying validity. The results provide empirical support for the utility of conceptualizing child health as a multidimensional state. Measures of distinct health status dimensions can be constructed for use in a general population of healthy children. The feasibility of analyzing the interrelationships of measures to assess the validity of health status measures has also been demonstrated.

There were, of course, exceptions to the overall pattern of successful construct validity findings. For example, whether HIS social relations items represent an aspect of social or mental health remains an unanswered question. The "getting along" items may be assessing a positive aspect of mental health. This interpretation is supported by content analysis of items in mental health scales for children, by substantial negative associations among the Social Relations Scale and the Anxiety and Depression Scales, and by the positive relationship between Social Relations and Positive Well-Being. Without a battery of social participation and activities questions (see Achenbach, 1978; NCHS, 1971b), HIS social relations items may not adequately measure the social component of child health. Alternatively, mental and social components of child health may be more substantially interrelated than originally believed. Finally, some items pertaining to resistance/susceptibility to illness and current health did not consistently correlate as hypothesized. It may be that parents focus on children's current health when rating their overall resistance or susceptibility, or that the concepts overlap more for children than they do for adults who are rating their own health (see Ware, Davies-Avery, and Donald, 1978). Further studies will be needed to determine the validity of this concept.

Remaining Validity Issues

HIS studies of validity, as well as some of the more stringent studies reported in the children's health status literature, have begun to establish that the measures of physical, mental, social, and general health reviewed here do, in fact, measure the health components they were intended to measure. However, several issues pertaining to the validity of children's health status measures for general populations remain to be studied.

First, older children, i.e., those 8 years and older, may be capable of rating their own health status more validly than their parents or proxy adults. No general population surveys of health that used children under age 14 as the primary respondent were identified in the literature review. However, there appear to be no empirically determined reasons why children at least 8 years old could not answer, accurately, many questions about health that are now asked of their parents. In psychological studies of cognitive development and in many classroom situations, children who are able to think and reason in a concrete manner seem to respond routinely and appropriately to questions regarding physicial and social causality, which seem more complex than those now used to assess health status in the HIS (see Flavell, 1970).

Even if children did not serve as primary respondents, it would be valuable to include them as informants, along with their parents, physicians, teachers, and others who are in a position to provide physical, mental, social, and general health-related information, so that a more complete picture of children's health status could be drawn. For example, the National Health Examination Survey (NCHS, 1974; 1975a and 1975b), has collected independent ratings of general health, and of the amount of nervousness or tension that is exhibited by children aged 12-17, from both a parent (proxy) and the child. With respect to general health status ratings, parents reported their children's health to be "excellent" (33 percent), "very good" (34 percent), "good" (30 percent), "fair" (3 percent), and "poor" (< 1 percent); children reported their own health to be: "excellent" (27 percent), "very good" (33 percent), "good" (36 percent), "fair" (4 percent), and "poor" (< 1 percent). Regarding nervousness or tension, parents reported as follows: "not nervous" (50 percent), "somewhat" [nervous] (46 percent), "very" [nervous] (4 percent). Children judged themselves as being tense: "never" (20 percent), "rarely" (36 percent), "sometimes" (36 percent), and "often" (8 percent). If the children's "rarely" and "sometimes" nervous response categories are combined and then compared with parents' "somewhat" nervous response category, it appears, from these data, that parents overstate their children's general health status, and understate their nervousness or feelings of tension. Although it is not clear whose responses are more valid in that survey, having two sets of data is likely to lead to a more comprehensive estimate of the child's health status than either set would alone.

Second, several other issues relevant to validity remain to be studied before the HIS child health scales are used to test hypotheses about the effects of health care policies on health status. Cross-sectional analyses and some longitudinal analyses will be performed to increase our understanding of scale scores in terms of (1) validity in relation to other information about child health status (e.g., developmental screening tests and clinical evaluations), (2) prediction of health and illness behavior (e.g., consumption of medical care services), and (3) changes in children's health over time. The validity of the HIS child's health status measures can be studied in relation to data obtained from sources other than the respondent, such as from physician claims data. Thus, HIS data will eventually permit analysis of (a) the predictive validity of enrollment and annual questionnaire mental health scores and general health ratings in relation to physician diagnoses (from claims data) for those children who received care, (b) the results of comprehensive screening examinations, (c) the extent of disability reported in biweekly health diaries kept by families, and (d) the use of medical care services. In addition, over periods of 3 to 5 years, problems described by children (and their parents) when they seek care and provider diagnoses can be compared with scale scores before and after treatment.

Third, the effects of response biases and of item and response category wording should be addressed in future research. Response bias has been ignored in general population health surveys, but may be a noteworthy problem in standardized survey measures of health (Ware, 1978; Ware and Karmos, 1976). This may be especially true when parents respond for their children. Because they may wish to present their families (and thus themselves) in the best possible light, parental tendencies to respond in a socially desirable manner may result in children appearing to be healthier than they actually are. Bias due to acquiescent and opposition response sets, i.e., tendencies to endorse or negate items regardless of content, may also affect scores.

Finally, how respondents interpret some questions and use some response categories in the HIS requires further study. For example, as employed in the HIS functional status questions, the concept "health" may not mean the same thing to all respondents. Thus, if respondents do not equate "because of health" with presence of disease or chronic conditions, or include as health-related functional limitations those that are attributable to maturational or developmental delays, such as some self-care limitations in children 0-4 years old, the validity of these measures will be affected because actual limitations may be systematically underreported or overreported. This and other methodological issues are potential threats to validity of HIS measures for children and will be considered carefully as the experiment continues.

In summary, although additional research must be completed to address several important validity and measurement issues, findings thus far indicate that self-administered scales to measure child health in the HIS (1) are applicable to general populations, (2) possess sufficient variability to allow detection of potential differences in health status, (3) are generally reliable and represent an improvement in reliability over single-item measures used currently; and (4) have validity, i.e., contain useful information about the health status constructs they were developed to measure.

Appendix A

HIS MEASURES OF CHILDREN'S HEALTH STATUS, DAYTON, OHIO

Background

HIS measures of health for children were first fielded in Dayton, Ohio, in 1974. At that time, a full battery of children's items had not yet been developed because efforts were being concentrated on developing adult measures of health. Thus, the batteries of items administered to children in Dayton were not as complete as those eventually fielded for children at enrollment in other sites. They encompassed two health dimensions—physical and social health—but excluded the mental health dimension. Choice of measures was based on information available in 1973 when the measures were selected. Subsequent revisions and additions to children's health status batteries are described in Chapter 3 and in Appendixes D and E of this volume. For comparative purposes, results of scaling analyses pertaining to physical health, social health, and satisfaction with development for Dayton children are reported in this appendix.

Description of Health Status Measures

PHYSICAL HEALTH

Two batteries of questionnaire items, one for ages 0-4 and one for ages 5-13, pertaining to physical health in terms of functional status were fielded at enrollment in Dayton. Physical health measures focused on inability to perform a variety of specific daily activities, including self-care activities, physical activities, mobility, and role activities, such as going to school.

The HIS questionnaire items on functional limitations for children aged 0-4 were constructed to measure four categories of limitations: (1) physical activity, (2) role activity, (3) mobility, and (4) self-care limitations. A proxy respondent for each child rated each of the six items representing the four categories of functional limitations separately (see Table A.1 for specific items). Whenever a functional limitation was endorsed, the respondent rated the duration as follows: (1) less than 1 month, (2) 1 to 3 months, or (3) more than 3 months. Limitations present for 3 months or more were considered chronic.

Two mobility items pertained to being in bed for all or most of the day and in a hospital or other medical facility. Two role activity items pertained to limitations in the kind or amount of play and in the ability to take part in ordinary play. One item pertained to limitations in self-care activities and another to physical activity (e.g., the use of supportive devices to walk).

The eleven functional limitations items for children aged 5-13 were constructed to measure the same four categories of limitations as those for children 0-4 years old (see Table A.2). The mobility items pertained to restrictions in travel in terms of both range and freedom to move about from place to place. The physical activity

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Table A.1

FUNCTIONAL LIMITATIONS ITEMS GROUPED BY CONSTRUCT USED TO ASSESS THE PHYSICAL HEALTH OF CHILDREN AGED 0-4, DAYTON, OHIO

Category	Item[a]	Content[b]
Mobility	47	Is this child in bed for all or most of the day because of health?
	49	Is this child in a hospital or other medical facility because of health?
Physical activity	45	Does this child use crutches, artificial limbs, or braces to walk?
Role activity	41	Is this child limited in the kind or amount of play he can do because of health?
	39	Is this child able to take part in all ordinary play with other children?
Self-care activity	43	Does this child need more help than normal for children of the same age in eating, dressing, bathing, or using the toilet?

[a] Item numbers from Form A of the Dayton Medical History Questionnaire, Ages 0-4.

[b] For each item endorsed, another question was asked to ascertain duration of limitation.

items pertained to limitations in physical movement, including having trouble lifting, stooping, using stairs, and walking as far and as fast as usual for children of the same age. The role activity items related to limitations in kinds of schoolwork, in ability to go to school, and in kinds of other activities, such as playing. The self-care item concerned limitations in activities such as eating, dressing, bathing, or using the toilet.

SOCIAL RELATIONS

Three social health items referring to the quality of the child's interpersonal interactions were included for children aged 5-13. No corresponding items were administered for children aged 0-4. The three items (see Table A.3) refer to the degree to which the child has gotten along with other children, the family, the teacher, and classmates and are similar to items used in the National Health Examination Survey (NCHS, 1973).

PARENT CONCERN

Three items hypothesized to measure parental concern with the child's interpersonal interactions were constructed for use with children aged 5-13 in the HIS (see Table A.4). Items refer to the amount of parental worry about the child's ability to get along with other children, the family, and in school.

Table A.2

FUNCTIONAL LIMITATIONS ITEMS GROUPED BY CONSTRUCT USED TO ASSESS THE PHYSICAL HEALTH OF CHILDREN AGED 5-13, DAYTON, OHIO

Category	Item[a]	Content[b]
Mobility	54	Does this child have trouble using public transportation because of health?
	60	Does this child need help to go outside because of health?
	62	Is this child in bed or a chair for most or all of the day because of health?
	64	Is this child in a hospital or other medical facility because of health?
Physical activity	56	Does this child have trouble lifting, stooping, using chairs, or inclines (walking up ramps or hills)?
	52	Does this child have trouble walking as far and as fast as usual for persons of the same age?
	58	Does this child use canes, crutches, artificial limbs or braces to walk?
Role activity	48	Is this child limited in the amount or kind of other activities (such as playing, helping around the house, hobbies) because of health?
	46	Is this child limited in the amount or kind of schoolwork (s)he can do because of health?
	44	Is this child unable to go to school because of health? (Consider nursery school or kindergarten as "school.")
Self-care activity	50	Does this child need help eating, dressing, bathing, or using the toilet because of health?

[a] Item numbers from Form A of the Dayton Medical History Questionnaire, Ages 5-13.

[b] For each item endorsed, another question was asked to ascertain duration of limitation.

Table A.3

HIS ITEMS DEFINING SOCIAL RELATIONS ITEMS, CHILDREN AGED 5-13, DAYTON, OHIO

Item[a]	Content[b]
3	During the past *3 months*, how well has this child gotten along with other children?
5	During the past *3 months*, how well has this child gotten along with the family?
8	During the past *3 months*, how well has this child gotten along in school with teacher and classmates?

[a] Item number from Form A of the Dayton Medical History Questionnaire, Ages 5-13.

[b] Response categories were "very well, "quite well," "pretty well," "not too well," "not well at all."

SATISFACTION WITH DEVELOPMENT

This aspect of health status was defined in terms of parental satisfaction with younger (0-4) children's development in four areas of interest: (1) overall physical development, (2) eating habits, (3) sleeping habits, and (4) bowel habits (see Table A.5). The items were developed for the HIS and were the same as those fielded in the other HIS sites.

Results

SCALING PHYSICAL HEALTH ITEMS

Based on the content analysis of published physical health items (see Chapter 2) and empirical findings for children in the other five sites (see Chapter 4), the six functional limitations items for children 0-4 years old and the eleven limitations items for children 5-13 years old were grouped into four categories (see Tables A.6 and A.7). The number of children having limitations was too small to test these hypothesized groupings by using scalogram analysis. Thus, for hypothesized categories containing more than one item, a dichotomous score of zero (limitations absent) or one (one or more limitations present) was assigned.

Descriptive Statistics: Items

The number of children in either age group with any functional limitations was small. In the 0-4 age group, 94 percent were free of limitations, 3.2 percent had acute limitations only, 1.6 percent had chronic limitations only, and 0.5 percent had both acute and chronic limitations. Thus, limitations of any duration were scored

Table A.4

HIS ITEMS DEFINING PARENT CONCERN ITEMS, CHILDREN AGED 5-13, DAYTON, OHIO

Item[a]	Content[b]
4	During the past *3 months*, how much have you been worried about how well this child gets along with other children?
6	During the past *3 months*, how worried have you been about how well this child gets along with the family?
9	During the last *3 months* in school, how worried have you been about how well this child gets along in school?

---

[a] Item number from Form A of the Dayton Medical History Questionnaire, Ages 5-13.

[b] Response categories were: "a lot," "somewhat," "a little," "not at all."

Table A.5

HIS ITEMS DEFINING SATISFACTION WITH DEVELOPMENT ITEMS, CHILDREN AGED 0-4, DAYTON, OHIO

Item[a]	Content[b]
6	Considering this child's progress in sitting up, walking, and talking, how do you feel about the way he/she is growing up or developing?
7	How do you feel about this child's eating habits?
8	How do you feel about this child's sleeping habits?
9	How do you feel about this child's bowel habits?

---

[a] Item numbers from Form A of the Dayton Medical History Questionnaire, Ages 0-4.

[b] Response categories were "very satisfied," "somewhat satisfied," "neither satisfied nor worried," "somewhat worried," "very worried."

Table A.6

Hypothesized Scales, Number and Percentage of No Limitations, Acute Limitations, Chronic Limitations, and Missing or Inconsistent Data, Children Aged 0-4, Dayton, Ohio

Category/Order	Item[a]	Content	No Limitations		Chronic Limitations		Acute Limitations		Missing or Inconsistent Data	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent
Mobility										
1	47	In bed	186	98.9	0	0.0	0	0.0	2	1.1
2	49	In hospital	182	96.8	1	0.5	3	1.6	2	1.1
Physical activity	45	Use of supportive devices to walk	186	98.9	0	0.0	0	0.0	2	1.1
Role activity										
1	41	Limited in kind or amount of play	183	97.3	2	1.1	1	0.5	2	1.1
2	39	Unable to take part in ordinary play	180	95.7	1	0.5	3	1.6	4	2.2
Self-care activity	43	Needs help eating, dressing, bathing	181	96.3	2	1.1	0	0.0	5	2.7

[a] Item numbers from Form A of the Dayton Medical History Questionnaire, Ages 0-4.

Table A.7

HYPOTHESIZED SCALES, NUMBER AND PERCENTAGE OF NO LIMITATIONS, ACUTE LIMITATIONS, CHRONIC LIMITATIONS, AND MISSING OR INCONSISTENT DATA, CHILDREN AGED 5-13, DAYTON, OHIO

			No Limitations		Chronic Limitations		Acute Limitations		Missing or Inconsistent Data	
Category/Order	Item[a]	Content	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Mobility										
1	54	Trouble using public transportation	349	99.1	2	0.6	0	0.0	1	0.3
2	60	Needs help to go outside	349	99.1	1	0.3	0	0.0	2	0.6
3	62	In bed or chair	349	99.1	1	0.3	0	0.0	2	0.6
4	64	In a hospital	350	99.4	0	0.0	0	0.0	2	0.6
Physical activity										
1	56	Trouble lifting, stooping	344	97.7	4	1.1	0	0.0	4	1.1
2	52	Trouble walking far and fast	344	97.7	7	2.0	0	0.0	1	0.3
3	58	Use of supportive devices	350	99.4	0	0.0	0	0.0	2	0.6
Role activity										
1	48	Limited in kind of other activities	342	97.2	8	2.3	0	0.0	2	0.6
2	46	Limited in kind of schoolwork	348	98.9	3	0.9	0	0.0	1	0.3
3	44	Unable to go to school	349	99.1	1	0.3	1	0.3	1	0.3
Self-care activity	50	Needs help eating, dressing, bathing	349	99.1	2	0.6	0	0.0	1	0.3

[a] Item numbers from Form A of the Dayton Medical History Questionnaire, Ages 5-13.

for 5.3 percent of younger children. Table A.6 shows the percentages of children aged 0-4 with and without specific limitations. In the 5-13 age group, 96.6 percent were free of limitations, 0.3 percent had acute limitations only, and 3.1 percent had chronic limitations only. Limitations of any kind or duration were scored for 3.4 percent of the older children (see Table A.7 for percentages of specific activity limitations).

Definitions of Physical Health Measures for Children 0-4

Four physical health measures were assigned dichotomous (present/absent) scores: (1) the single-item Physical Activity Limitations, (2) the two-item Role Activity Limitations, (3) the combined three-item Self-Care/Mobility Limitations, and (4) the combined six-item Total Limitations (one or more limitations among all limitations categories). As was the case in the other sites, children with chronic limitations and those with limitations of any duration were assigned scores (see Table A.8 for summary information on final physical health scores).

Definitions of Physical Health Measures for Children 5-13

Scores for four physical health measures were also computed for older children (see Table A.8). These dichotomous scores included: (1) the three-item Physical Activities Limitations, (2) the three-item Role Activities Limitations, (3) the combined five-item Self-Care/Mobility Limitations, and (4) the combined 11-item Total Limitations. Children with chronic limitations and limitations of any duration were assigned scores on each physical health measure.

SCALING SOCIAL RELATIONS, PARENT CONCERN, AND SATISFACTION WITH DEVELOPMENT ITEMS

Based on content analysis of published health status literature for children (see Chapter 2) and the empirical findings for children in the other HIS sites (see Chapter 4), the four satisfaction with development items for younger children were grouped, as were the six social relations and parent concern items (see Tables A.3 through A.5). The item groupings were verified by factor analysis. Information on the factor analyses, construction of scales, descriptive statistics for scales, and reliability estimates is given below.

Descriptive Statistics for Social Relations, Parent Concern, and Satisfaction with Development Items

The mean, standard deviation, number of missing item responses, and response values for each item hypothesized to measure satisfaction with development, social relations, and parent concern are shown in Tables A.9 and A.10. Score distributions for items were skewed, with mean values consistently on the favorable side of the item midpoint, suggesting that generally good health was reported for children. It was judged that item score variability within hypothesized item groupings was sufficient to allow tests and scoring of summated rating scales.

Table A.8

SUMMARY INFORMATION ON FINAL PHYSICAL HEALTH SCORES, DAYTON, OHIO

Measures[a]	Number of Items	Possible Score Low	Possible Score High	Mean	Standard Deviation	Scaling Method	Meaning of a High Score
				Ages 0-4			
Self-Care/Mobility Limitations	3	0	1			Dichotomous score[b]	Needs help eating, dressing, bathing; or is in hospital or bed all or most of the day.
Chronic limitations				.016	0.13		
Any limitations				.027	0.16		
Physical Activity Limitations	1	0	1			Single-item score	Uses supportive devices to walk.
Chronic limitations				0.0	0.0		
Any limitations				0.0	0.0		
Role Activity Limitations	2	0	1			Dichotomous score[b]	Limited in kinds of play or cannot take part in ordinary play.
Chronic limitations				.011	0.10		
Any limitations				.043	0.20		
Total Functional Limitations	6	0	1			Dichotomous score[b]	One or more limitations of any kind (i.e., self-care/mobility, physical activity, or role activity limitations).
Chronic limitations				.022	0.14		
Any limitations				.054	0.23		
				Ages 5-13			
Self-Care/Mobility Limitations	5	0	1			Dichotomous score[b]	In hospital or bed all or most of the day; needs help to go outside or in using public transportation.
Chronic limitations				.009	0.09		
Any limitations				.009	0.09		
Physical Activity Limitations	3	0	1			Dichotomous score[b]	Trouble lifting, stooping, or walking far and fast; or uses supportive devices.
Chronic limitations				.020	0.14		
Any limitations				.020	0.14		
Role Activity Limitations	3	0	1			Dichotomous score[b]	Limited in kinds of schoolwork or other activities; or cannot go to school.
Chronic limitations				.026	0.16		
Any limitations				.028	0.17		
Total Functional Limitations	11	0	1			Dichotomous score[b]	One or more limitations of any kind (i.e., self-care/mobility, physical activity, or role activity limitations).
Chronic limitations				.031	0.17		
Any limitations				.034	0.18		

[a] Scores on all measures were assigned both for chronically limited children and for children with limitations of any duration.

[b] Scored as limited if a limitation was reported on one or more items.

Table A.9

MEANS, STANDARD DEVIATIONS, AND RESPONSE FREQUENCIES FOR SATISFACTION WITH DEVELOPMENT ITEMS, CHILDREN AGED 0-4, DAYTON, OHIO (N=188)

Item[a]	Mean	Standard Deviation	Missing Data	Response Values[b]				
				1	2	3	4	5
6	4.87	.50	1	1	1	4	9	172
7	4.43	.85	1	0	9	18	44	116
8	4.59	.80	1	2	4	13	31	137
9	4.73	.62	1	1	1	8	28	149

[a] Item numbers from Form A of the Dayton Medical History Questionnaire, Ages 0-4.

[b] Scoring of response choices has been reversed to reflect the direction of scoring so that a high number reflects more satisfaction.

Table A.10

MEANS, STANDARD DEVIATIONS, AND RESPONSE FREQUENCIES FOR SOCIAL RELATIONS AND PARENT CONCERN ITEMS, CHILDREN AGED 5-13, DAYTON, OHIO (N=352)

Item[a]	Mean	Standard Deviation	Missing Data	Response Values[b]				
				1	2	3	4	5
Social relations								
3	4.17	.83	1	0	5	82	112	152
5	4.07	.87	1	0	10	92	113	136
8	4.25	.78	3	0	7	52	137	153
Parent concern								
4	1.39	.71	1	253	69	20	9	--
6	1.48	.79	1	236	75	27	13	--
9	1.46	.78	3	237	79	18	15	--

[a] Item numbers from Form A of the Dayton Medical History Questionnaire, Ages 5-13.

[b] Scoring of response choices has been reversed when necessary to reflect the direction of scoring so that a high number reflects better social relations and maximal parent concern.

Construction of Summated Rating Scales

The four items hypothesized to measure satisfaction with development were factor analyzed. Because the distributions of the items were markedly skewed, gamma coefficients were computed among the items. The factor analysis was performed on the matrix of gamma correlation coefficients to test the unidimensionality of measurement (see Table A.11). One factor was generated with all items correlating moderately with it. Correlations were sufficiently high so that items could be summed to create a scale score[1] (after reversing response values so that a high score indicated satisfactory behavior).

The six items hypothesized to measure social relations and parent concern were also factor analyzed (see Table A.12). Two factors were identified and rotated. This analysis confirmed the hypothesized item groupings and did not suggest further unhypothesized factors. Then, item-scale correlations were examined (see Table A.13). These correlations (corrected for overlap) were high, suggesting that items in each scale are measuring the same construct. Two Likert-type scales were constructed, one representing each factor. Items 3, 5, and 8 were summed to create a Social Relations Scale, and items 4, 6, and 9 were summed to create a Parent Concern Scale. Item response values were reversed when necessary so that a high score indicated positive social relations and more parent concern.

Descriptive Statistics for Social Relations, Parent Concern, and Satisfaction with Development Scales

The means and standard deviations for the Satisfaction with Development, Social Relations, and Parent Concern Scale scores are given in Tables A.14 and A.15. As can be seen, the goal of roughly normally distributed scale scores was not achieved. All three scale means were on the favorable side of the midpoints of the possible scale range. However, there was sufficient scale variability to justify further analyses.

Table A.11

ROTATED FACTOR LOADINGS FOR SATISFACTION WITH DEVELOPMENT ITEMS, CHILDREN AGED 0-4, DAYTON, OHIO (N=188)

Item[a]	Content	Factor I	h^{2b}
7	Eating habits	79	62
8	Sleeping habits	66	44
9	Bowel habits	66	43
6	Developmental progress	58	33

[a] Item number from Form A of the Dayton Medical History Questionnaire, Ages 0-4.

[b] The amount of variance in each item is accounted for by the two factors.

Table A.12

ROTATED FACTOR LOADINGS FOR SOCIAL RELATIONS AND PARENT CONCERN ITEMS, CHILDREN AGED 5-13, DAYTON, OHIO (N = 352)

Item[a]	Content	Factors I	Factors II	h^2[b]
Social relations				
3	Get along with other children	85	-25	79
5	Get along with family	85	-20	77
8	Get along with teacher, classmates	76	-26	64
Parent concern				
6	Get along with family	-25	82	74
4	Get along with other children	-28	81	74
9	Get along with teacher, classmates	-17	80	68

[a] Item numbers from Form A of the Dayton Medical History Questionnaire, Ages 5-13.

[b] The amount of variance in each item is accounted for by the two factors.

Table A.13

ITEM-SCALE CORRELATIONS, CORRECTED FOR OVERLAP, FOR SOCIAL RELATIONS AND PARENT CONCERN ITEMS, CHILDREN AGED 5-13, DAYTON, OHIO (N = 352)

Item	Content	Item-Scale Correlation[a]
Social relations		
3	Get along with other children	.72
5	Get along with family	.68
8	Get along with teacher, classmates	.60
Parent concern		
4	Get along with other children	.67
6	Get along with family	.68
9	Get along with teacher, classmates	.58

[a] Corrected for overlap.

Table A.14

MEANS AND STANDARD DEVIATIONS FOR THE SATISFACTION WITH DEVELOPMENT SCALE, CHILDREN AGED 0-4, DAYTON, OHIO (N=188)

Scale	Number of Items	Highest Possible Score	Scale Midpoint[a]	Mean	Standard Deviation
Satisfaction with Development	4	20	12	18.62	1.80

[a] Middle of possible score range.

Table A.15

MEANS AND STANDARD DEVIATIONS FOR SOCIAL RELATIONS AND PARENT CONCERN SCALES, CHILDREN AGED 5-13, DAYTON, OHIO (N=352)

Scale	Number of Items	Highest Possible Score	Scale Midpoint[a]	Mean	Standard Deviation
Social Relations	3	15	9	12.49	2.12
Parent Concern[b]	3	12	7	4.32	1.92

[a] Middle of possible score range.

[b] A high score equals maximal parent concern.

RELIABILTY

Internal-consistency reliability estimates and homogeneity coefficients (average inter-item correlations) computed for the Satisfaction with Development, Social Relations, and Parent Concern Scales are given in Tables A.16 and A.17. All reliability estimates exceeded the standard of 0.50 for group comparisons, but the homogeneity coefficient of the Satisfaction with Development Scale was below the accepted standard of 0.30. Reliability estimates were substantially higher than those that would have been achieved with single-item measures of the same construct.

VALIDITY

Because the full complement of health status components was not measured in Dayton, and comprehensive validity studies have been reported for the newer children's health status measures used in the other (combined) sites (see Chapter 4), they were not repeated in Dayton.

Table A.16

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENT FOR SATISFACTION WITH DEVELOPMENT SCALE, CHILDREN AGED 0-4, DAYTON, OHIO (N=188)

Scale	Number of Items	Homogeneity[a]	Reliability[b]
Satisfaction with Development	4	.21	.51

[a] Average inter-item correlation.

[b] Internal consistency reliability.

Table A.17

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SOCIAL RELATIONS AND PARENT CONCERN SCALES, CHILDREN AGED 5-13, DAYTON, OHIO (N=352)

Scale	Number of Items	Homogeneity[a]	Reliability[b]
Social Relations	3	.60	.81
Parent Concern	3	.57	.80

[a] Average inter-item correlation.

[b] Internal consistency reliability.

Discussion

Results from comparable HIS measures of health status for Dayton children are similar to those reported for children in the other five sites. The percentage of children with any functional limitation was small, and scales to measure functional limitations could not be tested because very few children had any functional limitation.

Both the Social Relations and Satisfaction with Development Scales were identical in item content to those constructed for children in the other sites. This replication of findings in other sites provides further support for the taxonomy of health components on which the construction of scales was based. Furthermore, both scales were sufficiently reliable for group comparisons.

The Parent Concern Scale was unique to the Dayton sample, although one question regarding parental concern about the child's problems in getting along with others was asked at other sites. The factor analysis tended to support the construct validity of this scale, and reliability of the scale was high enough for use in making group comparisons in the HIS.

FOOTNOTE

1. When missing values for items were observed, they were assigned the population mean.

Appendix B

SUPPORTING TABLES

Table B.1

ROLE ACTIVITY SCALE[a] DEFINED BY SCALOGRAM CRITERIA, CHILDREN AGED 0-4

	Item Configurations			Chronic Limitations		Acute or Chronic Limitations	
Scale Score	(Item 19) Limited from Taking Part in Ordinary Play	(Item 20) Limited in Kinds or Amounts of Ordinary Play	(Item 21) Limited in Any Way from Doing Anything	Number	Percent of Total	Number	Percent of Total
3	Yes	Yes	Yes	3	0.44	3	0.44
2	No	Yes	Yes	2	0.29	3	0.44
1	No	No	Yes	3[b]	0.44	5[b]	0.74
0	No	No	No	647	95.29	644	94.84
-1	(c)	(c)	(c)	24	3.53	24	3.53
Total				679	99.99	679	99.99
Coefficient of reproducibility				0.92		0.94	
Coefficient of scalability				0.67		0.75	
Minimum marginal reproducibility[d]				0.75		0.76	

[a] To provide a stringent test of the scalability of the items, the scalogram analysis was performed only on children with one or more limitations.

[b] One child was assigned to this category based on the number of items passed, even though his pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[c] Because scalogram analyses were performed only on children with complete data, this category contains children who had one or more items missing. It also includes children who were rated inconsistently with respect to the duration of a given limitation (e.g., a child was said to be free of a limitation; however, the duration of that limitation was specified on another item).

[d] The minimum marginal reproducibility refers to the minimum coefficient of reproducibility that would be obtained given the item frequencies (regardless of the scalability of the items).

Table B.2

ROLE ACTIVITY SCALE[a] DEFINED BY SCALOGRAM CRITERIA, CHILDREN AGED 5-13

	Item Configurations			Chronic Limitations		Acute or Chronic Limitations	
Score	(Item 19) Health Keeps Child from Going to School	(Item 18) Unable To Do Certain Kinds of School Work	(Item 17) Limited in Any Way	Number	Percent of Total	Number	Percent of Total
3	Yes	Yes	Yes	1	0.07	1	0.07
2	No	Yes	Yes	9[b]	0.61	15[d]	1.02
1	No	No	Yes	31[c]	2.10	45[e]	3.05
0	No	No	No	1393	94.57	1373	93.21
-1	(f)	(f)	(f)	39	2.65	39	2.65
Total				1473	100.00	1473	100.00
Coefficient of reproducibility				0.80		0.70	
Coefficient of scalability				0.22		0.11	
Minimum marginal reproducibility[g]				0.75		0.67	

[a] To provide a stringent test of the scalability of the items, the scalogram analysis was performed only on children with one or more limitations.

[b] Three children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[c] Nine children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[d] Seven children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[e] Twenty children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[f] Because scalogram analyses were performed only on children with complete data, this category contains children who had one or more items missing. It also includes children who were rated inconsistently with respect to the duration of a given limitation (e.g., a child was said to be free of a limitation; however, the duration of that limitation was specified on another item).

[g] The minimum marginal reproducibility refers to the minimum coefficient of reproducibility that would be obtained given the item frequencies (regardless of the scalability of the items).

Table B.3

Physical Activity Scale,[a] Children Aged 5-13: Items Scored Separately

	Item Configurations					Chronic Limitations		Acute or Chronic Limitations	
Scale Score	(Item 16) Use of Supportive Devices To Walk	(Item 15) Trouble Walking One Block	(Item 13) Trouble Walking Several Blocks	(Item 14) Trouble Bending, Lifting, Stooping	(Item 12) Limited in Vigorous Activities	Number	Percent of Total	Number	Percent of Total
5	Yes	Yes	Yes	Yes	Yes	3	0.20	3	0.20
4	No	Yes	Yes	Yes	Yes	1[b]	0.07	1[b]	0.07
3	No	No	Yes	Yes	Yes	2	0.14	2	0.14
2	No	No	No	Yes	Yes	5[b]	0.34	9[c]	0.61
1	No	No	No	No	Yes	24[c]	1.63	33[d]	2.24
0	No	No	No	No	No	1395	94.70	1382	93.82
-1	(e)	(e)	(e)	(e)	(e)	43	2.92	43	2.92
Total						1473	100.00	1473	100.00
Coefficient of reproducibility						0.93		0.90	
Coefficient of scalability						0.62		0.43	
Minimum marginal reproducibility[f]						0.82		0.82	

[a] To provide a stringent test of the scalability of the items, the scalogram analysis was performed only on children with one or more limitations.

[b] One child was assigned to this category based on the number of items passed, even though his pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[c] Four children were assigned to this category, based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[d] Seven children were assigned to this category, based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[e] Because scalogram analyses were performed only on children with complete data, this category contains children who had one or more items missing. It also includes children who were rated inconsistently with respect to the duration of a given limitation (e.g., a child was said to be free of a limitation; however, the duration of that limitation was specified on another item).

[f] The minimum marginal reproducibility refers to the minimum coefficient of reproducibility that would be obtained given the item frequencies (regardless of the scalability of the items).

Table B.4

Physical Activity Scale,[a] Children Aged 5-13: Items Combined at Only One End of the Distribution

	Item Configurations				Chronic Limitations		Acute or Chronic Limitations	
Scale Score	(Item 16) Use of Supportive Devices To Walk	(Item 15) Trouble Walking One Block	(Item 13) Trouble Walking Several Blocks	(Item 14 or 12) Trouble Bending, Lifting, Stooping; or Limited in Vigorous Activities	Number	Percent of Total	Number	Percent of Total
4	Yes	Yes	Yes	Yes	4	0.27	4	0.27
3	No	Yes	Yes	Yes	0	0.00	0	0.00
2	No	No	Yes	Yes	3	0.20	6	0.41
1	No	No	No	Yes	28[b]	1.90	39[c]	2.65
0	No	No	No	No	1396	94.77	1382	93.82
-1	(d)	(d)	(d)	(d)	42	2.85	42	2.85
Total					1473	99.99	1473	100.00
Coefficient of reproducibility					0.97		0.97	
Coefficient of scalability					0.79		0.75	
Minimum marginal reproducibility[e]					0.86		0.88	

[a] To provide a stringent test of the scalability of the items, the scalogram analysis was performed only on children with one or more limitations.

[b] Two children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins et al., 1975).

[c] Three children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins et al., 1975).

[d] Because scalogram analyses were performed only on children with complete data, this category contains children who had one or more items missing. It also includes children who were rated inconsistently with respect to the duration of a given limitation (e.g., a child was said to be free of a limitation; however, the duration of that limitation was specified on another item).

[e] The minimum marginal reproducibility refers to the minimum coefficient of reproducibility that would be obtained given the item frequencies (regardless of the scalability of the items).

Table B.5

MOBILITY SCALE,[a] CHILDREN AGED 5-13

	Item Configurations			Chronic Limitations		Acute or Chronic Limitations	
Scale Score	(Item 11 or 10) In Bed or Chair for Most of the Day, or Indoors Most of the Day	(Item 9) Needs Help Getting Around the Neighborhood	(Item 8) Limited Use of Public Transportation	Number	Percent of Total	Number	Percent of Total
3	Yes	Yes	Yes	3	0.20	4	0.27
2	No	Yes	Yes	1[b]	0.07	0	0.00
1	No	No	Yes	3	0.20	11[c]	0.75
0	No	No	No	1407	95.52	1399	94.98
-1	(d)	(d)	(d)	59	4.00	59	4.00
Total				1473	99.99	1473	100.00
Coefficient of reproducibility				0.90		0.87	
Coefficient of scalability				0.67		0.57	
Minimum marginal reproducibility[e]				0.71		0.69	

[a] To provide a stringent test of the scalability of the items, the scalogram analysis was performed only on children with one or more limitations.

[b] One child was assigned to this category based on the number of items passed, even though his pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[c] Three children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[d] Because scalogram analyses were performed only on children with complete data, this category contains children who had one or more items missing. It also includes children who were rated inconsistently with respect to the duration of a given limitation (e.g., a child was said to be free of a limitation; however, the duration of that limitation was specified on another item).

[e] The minimum marginal reproducibility refers to the minimum coefficient of reproducibility that would be obtained given the item frequencies (regardless of the scalability of the items).

Table B.6

SELF-CARE/MOBILITY SCALE[a] DEFINED BY SCALOGRAM CRITERIA, CHILDREN AGED 5-13

	Item Configurations				Chronic Limitations		Acute or Chronic Limitations	
Scale Score	(Item 20) Needs Help Eating, Dressing, or Bathing	(Item 11 or 10) In Bed or Chair for Most of the Day, or Indoors Most of the Day	(Item 9) Needs Help Getting Around the Neighborhood	(Item 8) Limited Use of Public Transportation	Number	Percent of Total	Number	Percent of Total
4	Yes	Yes	Yes	Yes	3	0.20	3	0.20
3	No	Yes	Yes	Yes	0	0.00	0	0.00
2	No	No	Yes	Yes	0	0.00	1[b]	0.07
1	No	No	No	Yes	4[b]	0.27	12[c]	0.81
0	No	No	No	No	1403	95.25	1394	94.64
-1	(d)	(d)	(d)	(d)	63	4.28	63	4.28
Total					1473	100.00	1473	100.00
Coefficient of reproducibility					0.93		0.84	
Coefficient of scalability					0.80		0.50	
Minimum marginal reproducibility[e]					0.64		0.69	

[a] To provide a stringent test of the scalability of the items, scalogram analysis was performed only on children with one or more limitations.

[b] One child was assigned to this category based on the number of items passed, even though his pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[c] Four children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[d] Because scalogram analyses were performed only on children with complete data, this category contains children who had one or more items missing. It also includes children who were rated inconsistently with respect to the duration of a given limitation (e.g., a child was said to be free of a limitation; however, the duration of that limitation was specified on another item).

[e] The minimum marginal reproducibility refers to the minimum coefficient of reproducibility that would be obtained given the item frequencies (regardless of the scalability of the items).

Table B.7

AGGREGATE PHYSICAL ACTIVITY, MOBILITY, AND SELF-CARE ACTIVITY SCALE,[a] CHILDREN AGED 5-13

	Item Configurations							Chronic Limitations		Acute or Chronic Limitations	
Scale Score	(Item 20) Needs Help Eating, Dressing, or Bathing	(Item 11 or 10) In Bed or Chair for Most of the Day; or Indoors Most of the Day	(Item 9) Needs Help Getting Around the Neighborhood	(Item 8) Limited Use of Public Transportation	(Item 16 or 15) Use of Supportive Devices To Walk; or Trouble Walking One Block	(Item 13) Trouble Walking Several Blocks	(Item 14 or 12) Trouble Bending, Lifting, Stooping; or Limited in Vigorous Activities	Number	Percent of Total	Number	Percent of Total
7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3	0.20	3	0.20
6	No	Yes	Yes	Yes	Yes	Yes	Yes	0	0.00	0	0.00
5	No	No	Yes	Yes	Yes	Yes	Yes	0	0.00	1^b	0.07
4	No	No	No	Yes	Yes	Yes	Yes	1^b	0.07	0	0.00
3	No	No	No	No	Yes	Yes	Yes	1^b	0.07	2^c	0.14
2	No	No	No	No	No	Yes	Yes	4^c	0.27	10^d	0.68
1	No	No	No	No	No	No	Yes	22^b	1.49	32^e	2.17
0	No	No	No	No	No	No	No	1366	92.74	1349	91.58
-1	(f)	(f)	(f)	(f)	(f)	(f)	(f)	76	5.16	76	5.16
Total								1473	100.00	1473	100.00
Coefficient of reproducibility								0.95		0.92	
Coefficient of scalability								0.66		0.39	
Minimum marginal reproducibility[e]								0.87		0.86	

[a] To provide a stringent test of the scalability of the items, scalogram analysis was performed only on children with one or more chronic limitations.

[b] One child was assigned to this category based on the number of items passed, even though his pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[c] Two children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[d] Six children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[e] Five children were assigned to this category based on the number of items passed, even though their pattern did not conform to the perfect scale type (see Nie, Hull, Jenkins, et al., 1975).

[f] Because scalogram analyses were performed only on children with complete data, this category contains children who had one or more items missing. It also includes children who were rated inconsistently with respect to the duration of a given limitation (e.g., a child was said to be free of a limitation; however, the duration of that limitation was specified on another item).

[g] The minimum marginal reproducibility refers to the minimum coefficient of reproducibility that would be obtained given the item frequencies (regardless of the scalability of the items).

Table B.8

PHYSICAL ACTIVITY SCALE SCORES ASSIGNED TO CHILDREN AGED 5-13 WITH MISSING OR INCONSISTENT DATA AND ERROR PATTERNS[a]

Pattern Number	(Item 16 or 15) Uses Supportive Devices To Walk; or Has Trouble Walking One Block	(Item 13) Trouble Walking Several Blocks	(Item 14 or 12) Has Trouble Bending, Lifting, Stooping; or Limited in Vigorous Activity	N	Assigned Scale Score--Chronic Limitations[b]	Data Status Indicator[b]	Assigned Scale Score--Acute or Chronic Limitations[b]	Data Status Indicator[b]
			Inconsistent Data					
I1	Not limited	Not limited	(14) Not limited (12) Not limited--chronic or acute	6	0	1	0	1
I2	(16) Not limited (15) Not limited--chronic or acute or Both not limited--acute	Not limited	Not limited	4	0	1	0	1
I3	(16) Not limited--chronic (15) Not limited	Limited--chronic	Not limited	1	2	2	2	2
I4	Not limited	Not limited--acute	(14) Not limited (12) Not limited--acute	1	0	2	0	2
I5	(16) Not limited--acute (15) Not limited; or Both not limited--acute	Not limited--acute	(14) Not limited--acute (12) Not limited; or Both not limited--acute	9	0	1	0	2
I6	Not limited	Not limited--acute	(14) Not limited--acute (12) Not limited	1	0	1	0	2
I7	(16) Not limited--acute (15) Not limited--acute	Not limited--acute	(14) Not limited--acute (12) Limited--chronic	2	1	2	1	2
I8	(16) Not limited--acute (15) Not limited--acute	Not limited--acute	(14) Not limited--acute (12) Limited--acute	2	0	1	1	2
I9	(16) Not limited--chronic (15) Not limited--acute	Not limited	(14) Not limited--acute (12) Not limited	1	0	1	0	2
I10	(16) Not limited (15) Not limited--chronic	Not limited	(14) Not limited--chronic (12) Not limited--chronic	1	0	2	0	2
I11	(16) Not limited--chronic (15) Not limited--chronic	Not limited--chronic or acute	(14) Not limited--chronic (12) Not limited--acute; or Both not limited--chronic	3	0	2	0	2
I12	(16) Not limited (15) Not limited--acute	Not limited	(14) Not limited (12) Limited--acute	1	0	1	1	2
			Missing Data					
M1	Missing	Missing	Missing	3	-1	-1	-1	-1
M2	Not limited	Limited or missing	Not limited	1	0	2	0	2
M3	Not limited	Missing	Not limited	1	0	1	0	1
M4	Not limited	Not limited	(14) Not limited (12) Limited--missing	1	0	2	1	2
M5	(16) Missing (15) Not limited	Not limited	(14) Missing (12) Not limited	1	0	2	0	2
M6	Not limited	Not limited	(14) Not limited (12) Missing	1	0	1	0	1
M7	Not limited	Limited or missing	(14) Not limited (12) Limited--acute	1	0	1	2	1
			Error Patterns					
E1	Not limited	Limited--chronic	Not limited	2	2	2	2	2
E2	Not limited	Limited--acute	Not limited	1	(c)	(c)	2	2

[a] Form A of the Medical History Questionnaire, Ages 5-13.

[b] 0 = perfect scale type.
1 = estimated score, probably accurate.
2 = estimated score, may be inaccurate.
-1 = scale score missing.

[c] Not applicable.

Table B.9

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES, CHILDREN AGED 0-4, SEATTLE (N=300)

Item[a]/Content		CH	PH	RS	DS
Current Health (CH)					
14	General health	.70*	.25	.46	.31
34A	Health excellent	.71*	.31	.53	.32
34D	Less healthy than others	.59*	.23	.50	.27
Prior Health (PH)					
34B	So sick thought die	.27	.44*	.21	.15
34E	Never seriously ill	.25	.44*	.15	.16
Resistance/Susceptibility (RS)					
34C	Resists illness	.59	.22	.52*	.28
34F	Usually catches something	.43	.14	.52*	.20
Satisfaction with Development (DS)					
9	Satisfaction with growth	.22	.21	.12	.15*
10	Satisfaction with eating	.22	.07	.18	.22*
11	Satisfaction with sleeping	.20	.08	.14	.33*
12	Satisfaction with bowels	.23	.13	.23	.32*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4.

* Hypothesized scales and correlations corrected for overlap.

Table B.10

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES, CHILDREN AGED 0-4, FITCHBURG/FRANKLIN COUNTY (N=149)

Item[a]/Content		CH	PH	RS	DS
Current Health (CH)					
14	General health	.72*	.46	.49	.27
34A	Health excellent	.76*	.49	.51	.33
34D	Less healthy than others	.66*	.46	.65	.31
Prior Health (PH)					
34B	So sick thought die	.53	.40*	.37	.16
34E	Never seriously ill	.38	.40*	.36	.24
Resistance/Susceptibility (RS)					
34C	Resists illness	.66	.43	.50*	.26
34F	Usually catches something	.45	.33	.50*	.21
Satisfaction with Development (DS)					
9	Satisfaction with growth	.19	.15	.17	.44*
10	Satisfaction with eating	.39	.17	.20	.37*
11	Satisfaction with sleeping	.13	.15	.07	.45*
12	Satisfaction with bowels	.20	.21	.30	.35*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4.

* Hypothesized scales and correlations corrected for overlap.

Table B.11

Correlations Between Health Status Items and Hypothesized Scales, Children Aged 0-4, Charleston/Georgetown County (N = 229)

Item[a]/Content		CH	PH	RS	DS
Current Health (CH)					
14	General health	.55*	.12	.22	.32
34A	Health excellent	.50*	.25	.27	.18
34D	Less healthy than others	.40*	.23	.24	.03
Prior Health (PH)					
34B	So sick thought die	.28	.26*	.28	.03
34E	Never seriously ill	.17	.26*	.28	.01
Resistance/Susceptibility (RS)					
34C	Resists illness	.28	.38	.28*	.06
34F	Usually catches something	.23	.19	.28*	.08
Satisfaction with Development (DS)					
9	Satisfaction with growth	.32	.18	.14	.33*
10	Satisfaction with eating	.05	.01	.10	.44*
11	Satisfaction with sleeping	.10	.00	-.03	.43*
12	Satisfaction with bowels	.12	-.07	.03	.38*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4.

*Hypothesized scales and correlations corrected for overlap.

Table B.12

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES (INCLUDING ONE MENTAL HEALTH SCALE), CHILDREN AGED 5-13, SEATTLE (N=604)

Item[a]/Content		CH	PH	RS	MHI	SR
Current Health (CH)						
5	General health	.58*	.22	.45	.22	.20
55A	Health excellent	.61*	.27	.50	.29	.23
55D	Less healthy than others	.46*	.26	.50	.17	.20
Prior Health (PH)						
55B	So sick thought die	.29	.50*	.22	.08	.08
55E	Never seriously ill	.26	.50*	.26	.11	.09
Resistance/Susceptibility (RS)						
55C	Resists illness	.59	.29	.59*	.22	.14
55F	Usually catches something	.49	.21	.59*	.14	.09
Mental Health Index (MHI)						
42	Child seems lonely	.19	.15	.17	.57*	.42
43	Child seems relaxed	.19	.07	.10	.63*	.40
44	Child enjoys things	.17	.06	.13	.63*	.41
45	Child seems depressed	.16	.06	.11	.62*	.42
46	Child able to relax	.23	.10	.16	.56*	.37
47	Child nervous	.15	.07	.11	.59*	.35
48	Child restless	.12	.02	.12	.54*	.44
49	Child seems moody	.13	.04	.06	.62*	.39
50	Child seems cheerful	.20	.07	.16	.73*	.44
51	Child anxious	.19	.12	.14	.66*	.38
52	Child seems happy	.22	.05	.15	.71*	.48
53	Child awakes fresh	.25	.10	.21	.54*	.32
Social Relations (SR)						
35	Get along with children	.25	.08	.12	.51	.71*
35A (36)	Get along with family	.23	.08	.18	.53	.61*
35B (37)	Get along with teachers	.16	.08	.04	.45	.65*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

*Hypothesized scales and correlations corrected for overlap.

Table B.13

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES (INCLUDING THREE MENTAL HEALTH SCALES), CHILDREN AGED 5-13, SEATTLE (N=604)

Item[a]/Content		CH	PH	RS	ANX	DEP	PWB	SR
Current Health (CH)								
5	General health	.58*	.22	.45	-.18	-.19	.23	.20
55A	Health excellent	.61*	.27	.50	-.25	-.22	.30	.23
55D	Less healthy than others	.46*	.26	.50	-.17	-.11	.15	.20
Prior Health (PH)								
55B	So sick thought die	.29	.50*	.22	-.07	-.07	.06	.08
55E	Never seriously ill	.26	.50*	.26	-.09	-.11	.09	.09
Resistance/Susceptibility (RS)								
55C	Resists illness	.59	.29	.59*	-.19	-.17	.22	.14
55F	Usually catches something	.49	.21	.59*	-.12	-.10	.16	.09
Anxiety (ANX)								
43	Child seems relaxed	-.19	-.07	-.10	.56*	.51	-.57	-.40
46	Child able to relax	-.23	-.10	-.16	.50*	.42	-.54	-.37
47	Child nervous	-.15	-.07	-.11	.58*	.50	-.49	-.35
48	Child restless	-.12	-.02	-.12	.49*	.46	-.48	-.44
51	Child anxious	-.19	-.12	-.14	.61*	-.59	-.56	-.38
Depression (DEP)								
42	Child seems lonely	-.19	-.15	-.17	.53	.55*	-.47	-.41
45	Child seems depressed	-.16	-.06	-.11	.54	.62*	-.53	-.42
49	Child seems moody	-.14	-.04	-.07	.56	.52*	-.58	-.40
Positive Well-Being (PWB)								
44	Child enjoys things	.17	.06	.13	-.56	-.51	.60*	.41
50	Child seems cheerful	.20	.07	.16	-.63	-.61	.70*	.44
52	Child seems happy	.23	.06	.16	-.63	-.59	.71*	.48
53	Child awakes fresh	.25	.10	.21	-.51	-.41	.49*	.32
Social Relations (SR)								
35	Get along with children	.25	.08	.12	-.46	-.48	.43	.71*
35A (36)	Get along with family	.23	.08	.18	-.48	-.44	.50	.61*
35B (37)	Get along with teachers	.16	.08	.04	-.44	-.38	.37	.65*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

*Hypothesized scales and correlations corrected for overlap.

Table B.14

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES (INCLUDING THREE MENTAL HEALTH SCALES), CHILDREN AGED 5-13, FITCHBURG/FRANKLIN COUNTY (N=371)

Item[a]/Content		CH	PH	RS	ANX	DEP	PWB	SR
Current Health (CH)								
5	General health	.66*	.32	.44	-.20	-.13	.21	.16
55A	Health excellent	.61*	.33	.45	-.32	-.23	.34	.18
55D	Less healthy than others	.47*	.24	.51	-.12	-.11	.13	-.01
Prior Health (PH)								
55B	So sick thought die	.33	.50*	.15	-.08	-.01	.09	.00
55E	Never seriously ill	.30	.50*	.24	-.11	-.11	.14	.10
Resistance/Susceptibility (RS)								
55C	Resists illness	.55	.28	.51*	-.15	-.11	.15	.11
55F	Usually catches something	.45	.13	.51*	-.18	-.12	.12	.06
Anxiety (ANX)								
43	Child seems relaxed	-.17	-.11	-.09	.61*	.53	-.63	-.44
46	Child able to relax	-.17	-.07	-.13	.54*	.41	-.56	-.33
47	Child nervous	-.27	-.06	-.25	.61*	.38	-.41	-.25
48	Child restless	-.17	-.07	-.13	.60*	.51	-.50	-.41
51	Child anxious	-.21	-.12	-.14	.62*	.53	-.50	-.26
Depression (DEP)								
42	Child seems lonely	-.14	-.09	-.05	.47	.50*	-.48	-.29
45	Child seems depressed	-.23	-.09	-.14	.54	.59*	-.55	-.37
49	Child seems moody	-.09	-.02	-.12	.49	.50*	-.51	-.36
Positive Well-Being (PWB)								
44	Child enjoys things	.14	.09	.09	-.58	-.49	.64*	.40
50	Child seems cheerful	.20	.10	.09	-.62	-.60	.73*	.45
52	Child seems happy	.19	.04	.10	-.63	-.60	.71*	.47
53	Child awakes fresh	.31	.19	.18	-.44	-.42	.47*	.23
Social Relations (SR)								
35	Get along with children	.09	.00	.05	-.35	-.37	.37	.70*
35A (36)	Get along with family	.07	.04	.11	-.37	-.32	.38	.61*
35B (37)	Get along with teachers	.14	.12	.09	-.42	-.39	.43	.58*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

*Hypothesized scales and correlations corrected for overlap.

Table B.15

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES (INCLUDING ONE MENTAL HEALTH SCALE), CHILDREN AGED 5-13, FITCHBURG/FRANKLIN COUNTY (N=371)

Item[a]	Content	CH	PH	RS	MHI	SR
Current Health (CH)						
5	General health	.66*	.32	.44	.21	.16
55A	Health excellent	.61*	.33	.45	.34	.18
55D	Less healthy than others	.47*	.24	.51	.14	-.01
Prior Health (PH)						
55B	So sick thought die	.33	.50*	.15	.08	.00
55E	Never seriously ill	.30	.50*	.24	.14	.10
Resistance/Susceptibility (RS)						
55C	Resists illness	.55	.28	.51*	.16	.11
55F	Usually catches something	.45	.13	.51*	.16	.06
Mental Health Index (MHI)						
42	Child seems lonely	.13	.10	.04	.54*	.28
43	Child seems relaxed	.17	.11	.09	.69*	.44
44	Child enjoys things	.14	.09	.09	.65*	.40
45	Child seems depressed	.23	.09	.14	.62*	.37
46	Child able to relax	.17	.07	.13	.58*	.33
47	Child nervous	.27	.06	.25	.54*	.25
48	Child restless	.17	.07	.13	.62*	.41
49	Child seems moody	.09	.02	.12	.56*	.36
50	Child seems cheerful	.20	.10	.09	.73*	.45
51	Child anxious	.21	.12	.14	.63*	.26
52	Child seems happy	.19	.04	.10	.73*	.47
53	Child awakes fresh	.31	.19	.18	.50*	.23
Social Relations (SR)						
35	Get along with children	.09	.00	.05	.41	.70*
35A (36)	Get along with family	.07	.04	.11	.41	.61*
35B (37)	Get along with teachers	.14	.12	.09	.47	.58*

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[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

*Hypothesized scales and correlations corrected for overlap.

Table B.16

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES (INCLUDING ONE MENTAL HEALTH SCALE), CHILDREN AGED 5-13, CHARLESTON/GEORGETOWN COUNTY (N=493)

Item[a]	Content	CH	PH	RS	MHI	SR
Current Health (CH)						
5	General health	.56*	.22	.37	.36	.11
55A	Health excellent	.53*	.22	.33	.29	.17
55D	Less healthy than others	.39*	.29	.42	.29	.01
Prior Health (PH)						
55B	So sick thought die	.32	.25*	.23	.16	.02
55E	Never seriously ill	.21	.25*	.20	.17	.08
Resistance/Susceptibility (RS)						
55C	Resists illness	.45	.19	.27*	.28	.13
55F	Usually catches something	.32	.24	.27*	.29	.09
Mental Health Index (MHI)						
42	Child seems lonely	.21	.13	.20	.39*	.29
43	Child seems relaxed	.20	.12	.15	.41*	.21
44	Child enjoys things	.21	.06	.28	.52*	.34
45	Child seems depressed	.27	.10	.23	.54*	.27
46	Child able to relax	.20	.09	.19	.41*	.14
47	Child nervous	.24	.11	.20	.51*	.23
48	Child restless	.22	.19	.29	.52*	.30
49	Child seems moody	.27	.18	.22	.56*	.24
50	Child seems cheerful	.27	.13	.21	.52*	.31
51	Child anxious	.22	.06	.20	.50*	.22
52	Child seems happy	.28	.18	.27	.68*	.38
53	Child awakes fresh	.25	.14	.19	.43*	.14
Social Relations (SR)						
35	Get along with children	.09	.09	.12	.30	.60*
35A (36)	Get along with family	.06	.07	.13	.36	.58*
35B (37)	Get along with teachers	.12	.02	.09	.37	.61*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

*Hypothesized scales and correlations corrected for overlap.

Table B.17

CORRELATIONS BETWEEN HEALTH STATUS ITEMS AND HYPOTHESIZED SCALES (INCLUDING THREE MENTAL HEALTH SCALES), CHILDREN AGED 5-13, CHARLESTON/GEORGETOWN (N=493)

Item[a]	Content	CH	PH	RS	ANX	DEP	PWB	SR
Current Health (CH)								
5	General health	.56*	.22	.37	-.30	-.30	.33	.11
55A	Health excellent	.53*	.22	.33	-.23	-.26	.26	.17
55D	Less healthy than others	.39*	.29	.42	-.26	-.23	.24	.01
Prior Health (PH)								
55B	So sick thought die	.32	.25*	.23	-.14	-.16	.12	.02
55E	Never seriously ill	.21	.25*	.20	-.14	-.13	.16	.08
Resistance/Susceptibility (RS)								
55C	Resists illness	.45	.19	.27*	-.26	-.19	.25	.13
55F	Usually catches something	.32	.24	.27*	-.24	-.26	.26	.09
Anxiety (ANX)								
43	Child seems relaxed	-.20	-.12	-.15	.38*	.22	-.40	-.21
46	Child able to relax	-.20	-.09	-.19	.35*	.25	-.41	-.14
47	Child nervous	-.24	-.11	-.20	.42*	.51	-.37	-.23
48	Child restless	-.22	-.19	-.29	.38*	.56	-.39	-.30
51	Child anxious	-.22	-.06	-.20	.42*	.49	-.36	-.22
Depression (DEP)								
42	Child seems lonely	-.22	-.12	-.20	.34	.39*	-.30	-.29
45	Child seems depressed	-.27	-.10	-.23	.50	.50*	-.39	-.27
49	Child seems moody	-.27	-.18	-.22	.49	.44*	-.46	-.24
Positive Well-Being (PWB)								
44	Child enjoys things	.21	.06	.28	-.48	-.30	.48*	.34
50	Child seems cheerful	.27	.14	.21	-.42	-.35	.56*	.31
52	Child seems happy	.28	.18	.27	-.57	-.49	.67*	.38
53	Child awakes fresh	.26	.14	.19	-.34	-.37	.39*	.14
Social Relations (SR)								
35	Get along with children	.09	.09	.12	-.24	-.25	.28	.60*
35A (36)	Get along with family	.06	.07	.13	-.27	-.31	.35	.58*
35B (37)	Get along with teachers	.12	.02	.09	-.30	-.31	.33	.61*

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

*Hypothesized scales and correlations corrected for overlap.

Table B.18

ROTATED FACTOR LOADINGS FOR HEALTH STATUS ITEMS, CHILDREN AGED 0-4 (N=654)

		Factors				
Item[a]	Content	I	II	III	IV	h^2
15	Adult worry	80	08	-09	-11	67
16	Pain/distress	72	12	-11	-08	55
14	General health	-65	-03	42	15	63
34A	Health excellent	63	13	-48	-07	65
9	Satisfaction with growth	-42	-27	-19	35	41
34E	Never seriously ill	10	82	-12	-04	69
34B	So sick thought die	-14	-78	19	-01	65
34F	Usually catches something	01	-05	78	11	63
34C	Resists illness	24	24	-68	-07	58
34D	Less healthy than others	-38	-12	61	02	53
11	Satisfaction with sleeping	-04	-03	-01	76	58
12	Satisfaction with bowels	-11	04	12	67	48
10	Satisfaction with eating	-11	-04	11	65	45

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 0-4.

Table B.19

ROTATED FACTOR LOADINGS FOR HEALTH STATUS ITEMS, COMBINED SAMPLE, CHILDREN AGED 5-13

Item[a]	Content	Factors I	II	III	IV	V	VI	h^2
6	Adult worry	83	-09	07	-03	19	-05	75
7	Pain/distress	77	-07	04	-01	21	-13	66
5	General health	-68	34	-09	17	-02	01	62
55A	Health excellent	64	-36	14	-20	05	-06	61
55F	Usually catches something	-09	80	-04	-08	-24	03	72
55C	Resists illness	31	-70	10	-19	-04	-05	64
55D	Less healthy than others	-31	61	-19	15	-02	-03	53
55E	Never seriously ill	12	-10	82	-10	00	-05	71
55B	So sick thought die	-11	14	-82	-04	-10	00	71
46	Child able to relax	-12	02	-02	70	-13	07	52
43	Child seems relaxed	-09	-04	-06	67	-18	16	52
44	Child enjoys things	-02	08	02	67	-21	25	56
50	Child seems cheerful	-04	10	-01	65	-32	21	58
52	Child seems happy	-02	12	00	63	-42	24	65
53	Child awakes fresh	-14	15	-06	47	-33	00	38
47	Child nervous	17	-02	00	-14	73	-07	59
51	Child anxious	13	00	04	-24	71	-08	59
45	Child seems depressed	12	-08	00	-25	65	-15	52
48	Child restless	04	-08	01	-14	64	-29	53
49	Child seems moody	00	-08	02	-30	62	-17	51
42	Child seems lonely	07	-04	12	-21	50	-25	38
35	Get along with children	-03	05	-01	15	-14	84	76
35B (37)	Get along with teachers	-10	-05	-05	19	-17	78	69
35A (36)	Get along with family	00	12	00	21	-19	70	59
41	Adult worry regarding social relations	14	10	-02	-11	38	-55	49

[a] Item numbers from Form A of the Medical History Questionnaire, Ages 5-13.

Table B.20

MEANS AND STANDARD DEVIATIONS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 0-4, SEATTLE (N=300)

Scale	Possible Scores Low[a]	Possible Scores High	Scale Midpoint	Mean	Standard Deviation
Current Health	3	14	8.5	12.31	1.91
Prior Health	2	10	6.0	8.10	2.42
Resistance/Susceptibility	2	10	6.0	7.36	1.82
General Health Ratings Index[b]	7	34	20.5	27.78	4.63
Satisfaction with Development	4	20	12.0	18.31	1.85

[a] Lowest possible score is equal to the number of items in the scale.

[b] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

Table B.21

MEANS AND STANDARD DEVIATIONS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 0-4, FITCHBURG/FRANKLIN COUNTY (N=149)

Scale	Possible Scores Low[a]	Possible Scores High	Scale Midpoint	Mean	Standard Deviation
Current Health	3	14	8.5	12.76	1.78
Prior Health	2	10	6.0	8.12	2.27
Resistance/Susceptibility	2	10	6.0	7.48	1.75
General Health Ratings Index[b]	7	34	20.5	28.38	4.84
Satisfaction with Development	4	20	12.0	18.54	1.87

[a] Lowest possible score is equal to the number of items in the scale.

[b] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

Table B.22

MEANS AND STANDARD DEVIATIONS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 0-4, CHARLESTON/GEORGETOWN COUNTY (N=229)

Scale	Possible Scores		Scale Midpoint	Mean	Standard Deviation
	Low[a]	High			
Current Health	3	14	8.5	11.91	1.89
Prior Health	2	10	6.0	8.14	2.25
Resistance/Susceptibility	2	10	6.0	7.58	1.77
General Health Ratings Index[b]	7	34	20.5	27.66	4.35
Satisfaction with Development	4	20	12.0	18.13	2.28

[a] Lowest possible score is equal to the number of items in the scale.

[b] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

Table B.23

MEANS AND STANDARD DEVIATIONS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 5-13, SEATTLE (N=604)[a]

Scale	Possible Scores		Scale Midpoint	Mean	Standard Deviation
	Low[b]	High			
Current Health	3	14	8.5	12.49	1.65
Prior Health	2	10	6.0	8.14	2.46
Resistance/Susceptibility	2	10	6.0	7.99	1.61
General Health Ratings Index[c]	7	34	20.5	28.65	4.38
Anxiety	5	30	17.5	9.46	3.38
Depression	3	18	10.5	5.30	1.86
Positive Well-Being	4	24	14.0	19.53	2.64
Mental Health[d]	12	72	42.0	60.76	7.04
Social Relations	3	15	9.0	12.18	2.00

[a] N=605 for the general health ratings index.

[b] Lowest possible score is equal to the number of items in the scale.

[c] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

[d] Total score across all components of mental health: anxiety, depression, and positive well-being.

Table B.24

MEANS AND STANDARD DEVIATIONS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 5-13, FITCHBURG/FRANKLIN COUNTY (N=371)[a]

Scale	Possible Scores		Scale Midpoint	Mean	Standard Deviation
	Low[b]	High			
Current Health	3	14	8.5	12.70	1.74
Prior Health	2	10	6.0	8.24	2.39
Resistance/Susceptibility	2	10	6.0	7.96	1.70
General Health Ratings Index[c]	7	34	20.5	28.91	4.46
Anxiety	5	30	17.5	8.96	3.24
Depression	3	18	10.5	5.04	1.75
Positive Well-Being	4	24	14.0	20.04	2.33
Mental Health[d]	12	72	42.0	62.02	6.48
Social Relations	3	15	9.0	12.54	1.87

[a] N=372 for this index.

[b] Lowest possible score is equal to the number of items in the scale.

[c] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

[d] Total score across all components of mental health: anxiety, depression, and positive well-being.

Table B.25

MEANS AND STANDARD DEVIATIONS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 5-13, CHARLESTON/GEORGETOWN COUNTY (N=493)[a]

Scale	Possible Scores		Scale Midpoint	Mean	Standard Deviation
	Low[b]	High			
Current Health	3	14	8.5	11.73	1.94
Prior Health	2	10	6.0	8.10	2.22
Resistance/Susceptibility	2	10	6.0	7.82	1.78
General Health Ratings Index[c]	7	34	20.5	27.65	4.48
Anxiety	5	30	17.5	8.99	3.56
Depression	3	18	10.5	5.03	2.05
Positive Well-Being	4	24	14.0	19.95	3.13
Mental Health	12	72	42.0	61.90	7.42
Social Relations	3	15	9.0	12.97	1.95

[a] N=496 for this index.

[b] Lowest possible score is equal to the number of items in the scale.

[c] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

[d] Total score across all components of mental health: anxiety, depression, and positive well-being.

Table B.26

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 0-4, SEATTLE (N=300)

Scale	Number of Items	Homogeneity[a]	Reliability[b]
Current Health	3	.57	.80
Prior Health	2	.44	.61
Resistance/Susceptibility	2	.52	.68
General Health Ratings Index[c]	7	.35	.79
Satisfaction with Development	4	.17	.44

[a] Average inter-item correlation.

[b] Internal-consistency reliability.

[c] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

Table B.27

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 0-4, FITCHBURG/FRANKLIN COUNTY (N=149)

Scale	Number of Items	Homogeneity[a]	Reliability[b]
Current Health	3	.61	.82
Prior Health	2	.39	.56
Resistance/Susceptibility	2	.50	.66
General Health Ratings Index[c]	7	.46	.85
Satisfaction with Development	4	.26	.58

[a] Average inter-item correlation.

[b] Internal-consistency reliability.

[c] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

Table B.28

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 0-4, CHARLESTON/GEORGETOWN COUNTY (N=229)

Scale	Number of Items	Homogeneity[a]	Reliability[b]
Current Health	3	.36	.63
Prior Health	2	.25	.40
Resistance/Susceptibility	2	.28	.44
General Health Ratings Index[c]	7	.24	.68
Satisfaction with Development	4	.28	.61

[a] Average inter-item correlation.

[b] Inter-item correlation.

[c] Internal-consistency reliability.

[d] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

Table B.29

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 5-13, SEATTLE (N=604)[a]

Scale	Number of Items	Homogeneity[b]	Reliability[c]
Current Health	3	.44	.70
Prior Health	2	.48	.65
Resistance/Susceptibility	2	.59	.74
General Health Ratings Index[d]	7	.35	.79
Anxiety	5	.39	.76
Depression	3	.48	.74
Positive Well-Being	4	.49	.79
Mental Health[e]	12	.41	.89
Social Relations	3	.58	.81

[a] N=605 for this index.

[b] Internal-consistency reliability.

[c] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

[d] Total score across all components of mental health: anxiety, depression, and positive well-being.

Table B.30

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 5-13, FITCHBURG/FRANKLIN COUNTY (N = 371)[a]

Scale	Number of Items	Homogeneity[b]	Reliability[c]
Current Health	3	.47	.73
Prior Health	2	.48	.65
Resistance/Susceptibility	2	.51	.68
General Health Ratings Index[d]	7	.35	.79
Anxiety	5	.45	.80
Depression	3	.44	.71
Positive Well-Being	4	.51	.80
Mental Health[e]	12	.41	.89
Social Relations	3	.56	.79

[a] N=372 for this index.

[b] Average inter-item correlation.

[c] Internal-consistency reliability.

[d] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

[e] Total score across all components of mental health: anxiety, depression, and positive well-being.

Table B.31

HOMOGENEITY AND INTERNAL-CONSISTENCY COEFFICIENTS FOR SELECTED HEALTH STATUS SCALES, CHILDREN AGED 5-13, CHARLESTON/GEORGETOWN COUNTY (N=493)[a]

Scale	Number of Items	Homogeneity[b]	Reliability[c]
Current Health	3	.38	.65
Prior Health	2	.23	.38
Resistance/Susceptibility	2	.27	.43
General Health Ratings Index[d]	7	.26	.72
Anxiety	5	.24	.62
Depression	3	.37	.63
Positive Well-Being	4	.40	.73
Mental Health[e]	12	.28	.83
Social Relations	3	.52	.76

[a] N=496 for this index.

[b] Average inter-item correlation.

[c] Internal-consistency reliability.

[d] Total score across all three components of general health perceptions: current health, prior health, and resistance/susceptibility.

[e] Total score across all components of mental health: anxiety, depression, and positive well-being.

Table B.32

GAMMA ASSOCIATIONS AMONG PHYSICAL HEALTH MEASURES, CHILDREN AGED 0-4[a]

Measure	Role Activity Limitations (Chronic)	Role Activity Limitations (Acute & Chronic)	Physical Activity Limitations (Chronic)	Physical Activity Limitations (Acute & Chronic)	Self-Care Activity Limitations (Chronic)	Self-Care Activity Limitations (Acute & Chronic)
Role Activity Limitations (Chronic)	--					
Role Activity Limitations (Acute & Chronic)	1.00[a]	--				
Physical Activity Limitations (Chronic)	.92	.88	--			
Physical Activity Limitations (Acute & Chronic)	.87	.80	1.00	--		
Self-Care Activity Limitations (Chronic)	.98	.98	.88	.81	--	
Self-Care Activity Limitations (Acute & Chronic)	.98	.98	.87	.78	1.00	--

[a] N's range from 651 to 669 because of missing data.

Table B.33

GAMMA ASSOCIATIONS AMONG PHYSICAL HEALTH MEASURES, CHILDREN AGED 5-13[a]

Measure	Physical Activity Scale (Chronic)	Physical Activity Scale (Acute & Chronic)	Self-Care/Mobility Limitations (Chronic)	Self-Care/Mobility Limitations (Acute & Chronic)	Role Activity Limitations (Chronic)	Role Activity Limitations (Acute & Chronic)
Physical Activity Scale (Chronic)	--					
Physical Activity Scale (Acute & Chronic)	.99[a]	--				
Self-Care/Mobility Limitations (Chronic)	.99	.99	--			
Self-Care/Mobility Limitations (Acute & Chronic)	.93	.96	1.00	--		
Role Activity Limitations (Chronic)	.97	.95	.98	.86	--	
Role Activity Limitations (Acute & Chronic)	.96	.96	.98	.96	1.00	--

[a] N's range from 1449 to 1470 because of missing data.

Appendix C

STATISTICAL DECISIONS [1]

A gamma coefficient indicates the probability of observing the same or "like," as opposed to different or "unlike" (in the sense of "minus"), order in two classifications with intrinsic order (i.e., two ordered variables such as x and y). Gamma coefficients range from 1 (certainty of "like" order) through 0 (random or chance relationship) to -1 (certainty of "unlike" order). In a gross sense, the gamma statistic behaves like a correlation coefficient.

The statistical significance of a gamma coefficient—namely, whether the observed association is significantly different from 0 (i.e., no association)—varies with sample size and probability of ties in classification and may be tested by the following:

$$\sqrt{n}\ \ (G - \gamma)\ \sqrt{\frac{1 - P_t}{2(1 - G^2)}}\ \sim\ \text{Normal}\ (0, 1),$$

where n = sample size,
G = gamma value obtained from data,
γ = true gamma value,
P_t = probability that two individuals are tied on either the x or y variable.

The probability of ties on either x or y varies with the number of response categories (or ranges of scale scores) and the shapes of the score distributions for each variable. In general, the fewer the response categories (e.g., dichotomous) or the narrower the potential range of scores, and the more skewed the response distributions, the greater the probability of ties in one or both classifications. In the calculations, P_t must also be estimated from the data.

To solve for G_α, the upper α percentage point of the sample G, assume that $\gamma = 0$ and that the corresponding normal deviate defining cutoff is Z_α; thus,

$$\sqrt{n}\ \ (G - \gamma)\ \ \sqrt{1 - P_t}\ =\ Z_\alpha \sqrt{2(1 - G^2)}$$

$$\vdots$$

$$G_\alpha = \sqrt{\frac{2Z_\alpha^2}{n(1 - P_t) + 2Z_\alpha^2}}\ .$$

These cutoffs are conservative; with considerably more computation, it is possible to specify a slightly lower cutoff.

Numerical Examples from the HIS

1. Is the gamma association between the Mental Health Index and the General Health Ratings Index (0.22) for children aged 5-13 significantly different from 0?

Let $\alpha = 0.05$, two-tailed, $P_t = .2$ (small chance of ties in classification because of relatively wide ranges in variables and sufficient variability in response distributions), $n = 1473$ (older children in sample), and $Z_{.05} = 1.96$; then, solving for G_α,

$$G_\alpha = \sqrt{\frac{2(1.96)^2}{1473(1 - .2) + 2(1.96)^2}} = .08 .$$

Therefore, gamma associations $\geq .08$ or $\leq -.08$ are significantly different from 0 at $p \leq .05$. Observing that gamma $= 0.22$, we conclude that the Mental Health Index and the General Health Ratings Index show a statistically significant net positive association.

2. Is the gamma association between the total limitations score and the Satisfaction with Development Scale (-0.48) for children aged 0-4 significantly different from 0? Again let $\alpha = 0.05$, two-tailed, $P_t = .5$ (larger chance of ties in classification because of relatively narrow ranges in variables and very skewed response distributions), $n = 679$ (younger children in sample), and $Z_{.05} = 1.96$; then, solving for G_α,

$$G_\alpha = \sqrt{\frac{2(1.96)^2}{679(1 - .5) + 2(1.96)^2}} = .15 .$$

Therefore, gamma associations $\geq .15$ or ≤ -0.15 are significantly different from 0 at $p < .05$. Observing that gamma $= -0.48$, we conclude that the total limitations score and the Satisfaction with Development Scale show a statistically significantly net negative association.

FOOTNOTE

1. This discussion is based on material in Goodman and Kruskal (1963).

Appendix D

ENROLLMENT MEDICAL HISTORY QUESTIONNAIRES FOR AGES 0-4 AND 5-13

NORC: 4230-MHQ
11/75
OMB #85-R-0238
Expires: 12/80

Health Insurance Study
Seattle, Washington

MEDICAL HISTORY QUESTIONNAIRE

FORM A

Ages 0-4

TO BE FILLED OUT ABOUT: ______________________________

TO BE FILLED OUT BY: ______________________________
(Adult in family who knows the most about this child's health)

A NOTE ABOUT THIS QUESTIONNAIRE

This Medical History will provide the Health Insurance Study with important information about the past and current health of participants.

The information will in no way affect your insurance. The information is strictly confidential and will not be used or released except in statistical reports (except if required by law) and will not identify you or your family.

If you have any questions, or problems filling out this questionnaire, feel free to call the following person, who will be happy to help you, or will send an interviewer to help you.

LEE TAYLOR — (206) 323-8481

INSTRUCTIONS

READ EACH QUESTION CAREFULLY.

CIRCLE THE NUMBER OF THE ONE ANSWER THAT MOST CLOSELY FITS THIS CHILD.

Example:

1. HAS THIS CHILD EVER HAD A COLD?

Yes .... [✓ 1]
No 2

FOLLOW ANY INSTRUCTIONS NEXT TO THE NUMBER YOU CIRCLED, WHICH TELL YOU TO GO TO ANOTHER QUESTION OR ANOTHER PAGE.

Example:

22. DOES THIS CHILD WEAR GLASSES?

Yes .... [✓ 1] *—Answer 22-A*
No .... 2 *—Go to 23*

22-A. HOW LONG HAS THIS CHILD BEEN WEARING GLASSES?

(Circle one)

Less than 1 year .... [✓ 1]
About 1 year 2
About 2 years 3
More than 2 years 4

IF THERE ARE NO INSTRUCTIONS AFTER YOUR ANSWER, GO TO THE VERY NEXT QUESTION.

BEGIN ON THE NEXT PAGE →

DO NOT WRITE IN THIS SPACE

CARD 02

HEIGHT AND WEIGHT

1. HOW MUCH DID THIS CHILD WEIGH AT BIRTH?

_________ pounds, _________ ounces 13-16/

---

2. WAS THIS CHILD BORN PREMATURELY? (THAT IS, EARLY, OR NOT CARRIED AT LEAST 8½ MONTHS.)

(Circle one) 17/

Yes, born prematurely 1

No, not born prematurely 2

Don't know 3

---

3. HOW TALL IS THIS CHILD NOW, WITHOUT SHOES ON?

_________ feet, _________ inches 18-20/

---

4. HOW MUCH DOES THIS CHILD WEIGH NOW, WITHOUT HEAVY CLOTHING?

_________ pounds 21-23/

DEVELOPMENT

5. AT WHAT AGE DID THIS CHILD FIRST ROLL OVER? (If doesn't roll over yet, circle "99.")

_________ months Doesn't roll over yet . . . 99 24-25/

---

6. AT WHAT AGE DID THIS CHILD FIRST SIT UP WITHOUT HELP? (If doesn't sit up yet, circle "99.")

_________ months Doesn't sit up yet . . . 99 26-27/

---

7. AT WHAT AGE DID THIS CHILD FIRST WALK WITHOUT HELP? (If doesn't walk yet, circle "99.")

_________ months Doesn't walk yet . . . 99 28-29/

CARD 02

DO NOT
WRITE IN
THIS SPACE

8. AT WHAT AGE DID THIS CHILD SPEAK A REAL WORD FOR THE FIRST TIME? (FOR EXAMPLE, "MAMA" OR "DADA.") (If doesn't talk yet, circle "99.")

_______ months Doesn't talk yet . . . 99 30-31/

---

9. CONSIDERING THIS CHILD'S PROGRESS IN ROLLING OVER, SITTING UP, WALKING, AND TALKING, HOW DO YOU FEEL ABOUT THE WAY (S)HE IS GROWING UP OR DEVELOPING?

(Circle one) 32/

Very satisfied	1
Somewhat satisfied	2
Neither satisfied nor worried	3
Somewhat worried	4
Very worried	5

---

10. HOW DO YOU FEEL ABOUT THIS CHILD'S EATING HABITS?

(Circle one) 33/

Very satisfied	1
Somewhat satisfied	2
Neither satisfied nor worried	3
Somewhat worried	4
Very worried	5

---

11. HOW DO YOU FEEL ABOUT THIS CHILD'S SLEEPING HABITS?

(Circle one) 34/

Very satisfied	1
Somewhat satisfied	2
Neither satisfied nor worried	3
Somewhat worried	4
Very worried	5

CARD 02

DO NOT WRITE IN THIS SPACE

12. **HOW DO YOU FEEL ABOUT THIS CHILD'S BOWEL HABITS?**

(Circle one) 35/

Very satisfied	1
Somewhat satisfied	2
Neither satisfied nor worried	3
Somewhat worried	4
Very worried	5

---

13. **DO YOU FEEL THAT DOCTORS HAVE SPENT ENOUGH TIME TALKING TO YOU ABOUT THIS CHILD'S EATING, SLEEPING, AND BOWEL HABITS?**

(Circle one) 36/

They spend too much time talking about these things	1
Yes, enough time	2
No, not enough time	3
Haven't talked with a doctor about these things	4

Now Go To Next Page

CARD 02

GENERAL HEALTH

DO NOT WRITE IN THIS SPACE

14. IN GENERAL, WOULD YOU SAY THIS CHILD'S HEALTH IS EXCELLENT, GOOD, FAIR, OR POOR?

(Circle one) 37/

Excellent	1
Good	2
Fair	3
Poor	4

---

15. DURING THE PAST 3 MONTHS, HOW MUCH HAVE YOU WORRIED ABOUT THIS CHILD'S HEALTH?

(Circle one) 38/

A great deal	1
Somewhat	2
A little	3
Not at all	4

---

16. DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISTRESS HAS THIS CHILD'S HEALTH CAUSED HIM OR HER?

(Circle one) 39/

A great deal	1
Some	2
A little	3
None at all	4

---

17. IS THIS CHILD UNABLE TO WALK, UNLESS ASSISTED BY AN ADULT OR BY CRUTCHES, ARTIFICIAL LIMB, OR BRACES?

40/

Yes, unable to walk unless assisted	1	*—Answer 17-A*
No, no trouble walking	2	*—Go to 18, next page*
Not walking yet because of age	3	

17-A. HOW LONG HAS THE CHILD BEEN UNABLE TO WALK WITHOUT ASSISTANCE?

(Circle one) 41/

Less than 1 month	1
1 - 3 months	2
More than 3 months	3

CARD 02

DO NOT WRITE IN THIS SPACE

18. BECAUSE OF HEALTH, DOES THIS CHILD NEED MORE HELP THAN USUAL FOR A CHILD THIS AGE IN EATING, DRESSING, BATHING, OR USING THE TOILET? 42/

Yes .... 1 *—Answer 18-A*
No .... 2 *—Go to 19*

18-A. HOW LONG HAS THE CHILD NEEDED EXTRA HELP WITH EATING, DRESSING, BATHING OR USING THE TOILET?

(Circle one) 43/

Less than 1 month 1
1 - 3 months 2
More than 3 months 3

---

19. DOES THIS CHILD'S HEALTH KEEP HIM OR HER FROM TAKING PART IN ORDINARY PLAY?

Yes .... 1 *—Answer 19-A* 44/
No .... 2 *—Go to 20*

19-A. HOW LONG HAS THE CHILD'S HEALTH KEPT HIM OR HER FROM TAKING PART IN ORDINARY PLAY?

(Circle one) 45/

Less than 1 month 1
1 - 3 months 2
More than 3 months 3

---

20. DOES THIS CHILD'S HEALTH LIMIT THE KIND OR AMOUNT OF ORDINARY PLAY HE OR SHE CAN DO?

Yes, health limits this .... 1 *—Answer 20-A* 46/
No .... 2 *—Go to 21 next page*

20-A. HOW LONG HAS THE CHILD'S HEALTH LIMITED THE KIND OR AMOUNT OF PLAY HE OR SHE CAN DO? 47/

(Circle One)

Less than 1 month 1
1 - 3 months 2
More than 3 months 3

CARD 02

DO NOT WRITE IN THIS SPACE

21. DOES HEALTH LIMIT THIS CHILD IN ANY WAY FROM DOING ANYTHING HE OR SHE WANTS TO DO?

Yes .... 1 *—Answer 21-A* 48/
No .... 2 *—Go to 22,*

21-A. HOW LONG HAS THE CHILD'S HEALTH LIMITED HIM OR HER IN DOING THINGS HE OR SHE WANTS TO DO?

(Circle one) 49/

Less than 1 month 1
1 - 3 months 2
More than 3 months 3

FLUORIDES, DIET

22. DOES THIS CHILD USE FLUORIDE (FLORE-eyed) IN ANY OF THESE WAYS? (Please circle one number on each line.)

	Yes	No	Don't know	
A. Fluoridated toothpaste?	1	2	3	50/
B. Fluoride tablets on a regular basis?	1	2	3	51/
C. Fluoride mouthwash on a regular basis?	1	2	3	52/
D. Did the child ever have his teeth painted with fluoride by a dentist or dental assistant?	1	2	3	53/
E. Does the child use any fluoride-vitamin preparation?	1	2	3	54/
F. Fluoride drops on a regular basis?	1	2	3	55/

23. HOW OFTEN DOES THIS CHILD EAT SOMETHING IN BETWEEN REGULAR MEALS?

(Circle one) 56/

4 or more times a day 1
3 times a day 2
About twice a day 3
Maybe once a day 4
Occasionally, not every day 5
Rarely or never eats between meals 6
Child is an infant, does not eat regular meals ... 7

CARD 02

			DO NOT WRITE IN THIS SPACE
24. DURING THE PAST 24 HOURS, DID THIS CHILD EAT ANY OF THE FOODS LISTED BELOW. (Circle one number on each line. If the child ate even a little, circle "1" for "Yes." If he or she did not eat it at all, circle "2" for "No.")			
	Yes	No	
A. Sugar-coated cereal	1	2	57/
B. Cookies, cake, pie, doughnuts	1	2	58/
C. Soda pop, cola drinks	1	2	59/
D. Peanut butter	1	2	60/
E. Jelly or honey	1	2	61/
F. Raisins, figs, prunes	1	2	62/
G. Chewing gum	1	2	63/
H. Candy	1	2	64/
I. Sugar (table sugar)	1	2	65/

25. IF THE CHILD ATE ANY OF THESE FOODS IN THE PAST 24 HOURS, DID HE OR SHE EAT THEM ONLY DURING REGULAR MEALS (BREAKFAST, LUNCH OR DINNER), OR ONLY BETWEEN REGULAR MEALS, OR BOTH DURING AND BETWEEN MEALS?

	(Circle one)	
		66/
Regular meals only	1	
Between meals only	2	
Both during meals and between meals	3	
Child is an infant, does not eat regular meals	4	
Child did not eat any of above foods in past 24 hours	5	

26. DURING THE PAST 24 HOURS, HOW MANY TIMES DID THE CHILD. . .
(Circle one number on each line.)

	None	One time	Twice	Three times	Four or more	Don't know	
A. Drink milk (whole milk, skim milk, or low-fat)?	0	1	2	3	4	5	67/
B. Eat custard?	0	1	2	3	4	5	68/
C. Eat cheese?	0	1	2	3	4	5	69/
D. Have a milkshake (or frappe)?	0	1	2	3	4	5	70/
E. Have a malted milk?	0	1	2	3	4	5	71/

CARD 02

DO NOT WRITE IN THIS SPACE

IMMUNIZATIONS

27. HAS THIS CHILD HAD THE FOLLOWING SHOTS OR IMMUNIZATIONS? (Circle one number on each line.)

	Yes	No	Don't know	
A. DPT (Diphtheria, Whooping cough, and Tetanus)?	1	2	3	72/
B. Polio?	1	2	3	73/
C. Smallpox?	1	2	3	74/
D. Regular measles?	1	2	3	75/
E. German measles?	1	2	3	76/
F. Mumps?	1	2	3	77/
G. Other, don't know what for?	1	2	3	78/

Now Go To Next Page

CARD 02

SAFETY

DO NOT WRITE IN THIS SPACE

CARD 03

28. HAS THIS CHILD EVER ACCIDENTALLY SWALLOWED ANY MEDICINES, PILLS, OR POISON?

(Circle one) 13/

Never	1
Once	2
Twice	3
Three or more times	4
Dont know	5

---

29. HOW MUCH OF THE TIME DOES THIS CHILD USE AN INFANT CARRIER SEAT OR HARNESS WHICH IS ATTACHED TO SEAT BELTS, OR SEAT BELTS ONLY, WHEN RIDING IN A CAR OR TRUCK?

(Circle one) 14/

All of the time	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5
Never rides in car or truck	6

---

30. HOW MANY HARMFUL THINGS, LIKE MEDICINES OR HOUSEHOLD CLEANERS, ARE KEPT OUT OF THIS CHILD'S REACH OR LOCKED UP?

(Circle one) 15/

All of them are kept out of reach or locked up	1
Most of them are	2
Some of them are	3
A few of them are	4
None of them are	5

---

31. HOW MANY ELECTRICAL OUTLETS, NOT IN USE IN THE HOME, ARE COVERED WITH PLASTIC COVERS, TAPE, OR OTHER COVERING?

(Circle one) 16/

All unused outlets are covered	1
Most are covered	2
Some are covered	3
A few are covered	4
None are covered	5

CARD 03

DO NOT WRITE IN THIS SPACE

32. DO YOU FEEL THAT DOCTORS HAVE SPENT ENOUGH TIME TALKING WITH YOU ABOUT HOME AND CAR SAFETY FOR THIS CHILD?

(Circle one) 17/

They spend too much time talking about this 1
Yes, enough time 2
No, not enough time 3
Have not talked with a doctor about this 4

SYMPTOMS LIST

33. DURING THE PAST 30 DAYS, DID THIS CHILD HAVE ANY OF THE FOLLOWING SYMPTOMS? (IF (S)HE DID, DID YOU SEE A DOCTOR ABOUT IT? Please circle one number on each line:

1 — Child did not have the symptom at all in the past 30 days.
2 — Child had the symptom, but you did not see a doctor about it.
3 — Child had the symptom, and you did see a doctor about it.

	No, did not have this	Had it, but did not see doctor	Had it, and saw doctor	
A. Chicken pox	1	2	3	18/
B. A stomach ache without vomiting for less than 24 hours	1	2	3	19/
C. A stomach "flu" or virus, with vomiting or diarrhea lasting at least 2 days	1	2	3	20/
D. An ear infection or earache with fever	1	2	3	21/
E. An infection on the skin without fever	1	2	3	22/
F. A sore throat with high fever or tonsillitis	1	2	3	23/
G. A cough with a fever for at least 3 days	1	2	3	24/
H. Allergies (such as to grass or certain foods) without asthma	1	2	3	25/
I. Diarrhea (loose bowel movements) lasting for at least 3 days	1	2	3	26/
J. Poor eating habits	1	2	3	27/
K. Accidental poisoning or eating something harmful	1	2	3	28/
L. A convulsion or fit (seizure)	1	2	3	29/
M. Nosebleed	1	2	3	30/
N. A cold or runny nose without fever	1	2	3	31/
O. Head injury without loss of consciousness or vomiting	1	2	3	32/

CARD 03

DO NOT WRITE IN THIS SPACE

HEALTH PERCEPTIONS

34. **PLEASE READ EACH OF THE FOLLOWING STATEMENTS, AND THEN CIRCLE ONE OF THE NUMBERS ON EACH LINE TO INDICATE WHETHER THE STATEMENT IS TRUE OR FALSE FOR THIS CHILD. THERE ARE NO RIGHT OR WRONG ANSWERS.**

If a statement is definitely true for the child, circle 5.
If it is mostly true for the child, circle 4.
If you don't know whether it is true or false, circle 3.
If it is mostly false for the child, circle 2.
If it is definitely false for the child, circle 1.

SOME OF THE STATEMENTS MAY LOOK OR SEEM LIKE OTHERS. BUT EACH STATEMENT IS DIFFERENT, AND SHOULD BE RATED BY ITSELF.

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false	
A. This child's health is excellent	5	4	3	2	1	33/
B. This child was so sick once I thought he or she might die	5	4	3	2	1	34/
C. This child seems to resist illness very well	5	4	3	2	1	35/
D. This child seems to be less healthy than other children I know	5	4	3	2	1	36/
E. This child has never been seriously ill	5	4	3	2	1	37/
F. When there is something going around, this child usually catches it	5	4	3	2	1	38/

CARD 03

DO NOT WRITE IN THIS SPAC

MEDICINES TAKEN

35. **THIS QUESTION IS ABOUT THE PRESCRIPTION MEDICINES THIS CHILD HAS TAKEN IN THE PAST 48 HOURS (2 DAYS). IT IS VERY IMPORTANT THAT YOU ANSWER ONLY FOR THAT TIME (THE PAST 48 HOURS) AND ONLY ABOUT PRESCRIPTION MEDICINES THAT THE CHILD ACTUALLY TOOK DURING THAT PERIOD.**

DID THIS CHILD TAKE ANY PRESCRIPTION MEDICINES IN THE PAST 48 HOURS?

Yes .... 1 —*Answer 35-A-B* 39/
No .... 2 —*Go to page 19*

35-A. **HOW MANY DIFFERENT PRESCRIPTION MEDICINES IN THE PAST 48 HOURS? (Write in number)** 40/

________ prescription medicines

35-B. **FOR EACH DIFFERENT TYPE OF MEDICINE THIS CHILD TOOK IN THE PAST 48 HOURS, PLEASE FILL IN THE INFORMATION REQUESTED IN THE BOX BELOW.**

COPY THE INFORMATION FROM THE LABEL ON THE BOTTLE. IF ANY INFORMATION IS NOT ON THE LABEL, WRITE "NOT ON LABEL."

USE ONE BOX FOR EACH DIFFERENT TYPE OF MEDICINE.

(1)

NAME OF MEDICINE: ________________

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ____________

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ____________

PRESCRIPTION NUMBER: ____________ NC

NAME OF PHARMACY (DRUG STORE): ____________ NC

PHONE NUMBER OF PHARMACY: ____________ NC

DOSAGE (STRENGTH OF MEDICINE): ____________ NC

CARD 03

35. (Continued)

DO NOT WRITE IN THIS SPACE

(2) **NAME OF MEDICINE:** ____________

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ____________

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ____________

PRESCRIPTION NUMBER: ____________ NC

NAME OF PHARMACY (DRUG STORE): ____________ NC

PHONE NUMBER OF PHARMACY: ____________ NC

DOSAGE (STRENGTH OF MEDICINE): ____________ NC

(3) **NAME OF MEDICINE:** ____________

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ____________

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ____________

PRESCRIPTION NUMBER: ____________ NC

NAME OF PHARMACY (DRUG STORE): ____________ NC

PHONE NUMBER OF PHARMACY: ____________ NC

DOSAGE (STRENGTH OF MEDICINE): ____________ NC

35. (Continued)

DO NOT WRITE IN THIS SPACE

(4) **NAME OF MEDICINE:** ______

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ______

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ______

PRESCRIPTION NUMBER: ______ NC

NAME OF PHARMACY (DRUG STORE): ______ NC

PHONE NUMBER OF PHARMACY: ______ NC

DOSAGE (STRENGTH OF MEDICINE): ______ NC

(5) **NAME OF MEDICINE:** ______

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ______

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ______

PRESCRIPTION NUMBER: ______ NC

NAME OF PHARMACY (DRUG STORE): ______ NC

PHONE NUMBER OF PHARMACY: ______ NC

DOSAGE (STRENGTH OF MEDICINE): ______ NC

MEDICAL HISTORY QUESTIONNAIRE (SEATTLE)

FORM A MEDICINES SUPPLEMENT

Ages 0-4

NORC CASE #: ☐☐☐☐☐☐

HH: ☒

FAMILY UNIT #: ☐

FU: ☒

HIEI: 1 2 1

FILLED OUT ABOUT: ☒

FILLED OUT BY: ☒

☐☐ ☐☐ ☐☐☐☐
Month Day Year

KEYPUNCH VERIFICATION ☐

DO NOT WRITE IN THIS SPACE

THANK YOU.
THESE ARE ALL THE QUESTIONS WE HAVE ABOUT THIS CHILD NOW.

PLEASE FILL OUT THE 2 OR 3 ITEMS BELOW, THEN PUT THE QUESTIONNAIRE IN THE MAILING ENVELOPE.

---

36. PLEASE WRITE IN THE DATE THIS QUESTIONNAIRE WAS COMPLETED:

____

---

37. IF YOU HAVE ANY COMMENTS YOU WOULD LIKE TO MAKE ABOUT THIS CHILD'S HEALTH OR ABOUT THIS QUESTIONNAIRE, PLEASE WRITE THEM IN BELOW.

---

38. DID THE PERSON WHO WAS ASKED TO FILL OUT THE QUESTIONNAIRE DO IT, OR DID SOMEONE ELSE FILL IT OUT?

Person who was asked	1		41/
Someone else filled it out	2	*—Answer 38-A-B*	

38-A. WHAT IS THE MAIN REASON THE PERSON WHO WAS ASKED DID NOT FILL IT OUT?

(Circle one)

Can't read well enough	1	42/
Has poor eyesight	2	
Has trouble writing	3	
Trouble understanding English	4	
Form is too complicated	5	
Is away from home	6	
Some other reason	7	

What? ____

38-B. PLEASE WRITE IN NAME OF PERSON WHO FILLED IT OUT:

____

CARD 03

MEDICAL HISTORY QUESTIONNAIRE (SEATTLE)

FORM A **Ages 0-4**

SDP:	▨	01-10/
	CARD 01	11-12/
HH:	☒	13-20/
FAMILY UNIT #:	☐	21/
# ☐ of ☐		22-23/
FU:	☒	24-31/
HIEI:	1 2 0	32-34/
FILLED OUT ABOUT:	☒	35-42/
FILLED OUT BY:	☒	43-50/
☐☐☐☐☐☐☐☐ Month Day Year		51-58/
KEYPUNCH VERIFICATION	☐	59/

REC.	Yes 1	No 2	60/
REC. COMP	Yes 1	No 2	61/

NORC: 4230-MHQ
11/75
OMB #85-R-0238
Expires: 12/80

Health Insurance Study
Seattle, Washington

MEDICAL HISTORY QUESTIONNAIRE

FORM B

Ages 0-4

TO BE FILLED OUT ABOUT: ______________________________

TO BE FILLED OUT BY: ______________________________
(Adult in family who knows the most about this child's health)

A NOTE ABOUT THIS QUESTIONNAIRE

This Medical History will provide the Health Insurance Study with important information about the past and current health of participants.

The information will in no way affect your insurance. The information is strictly confidential and will not be used or released except in statistical reports (except if required by law) and will not identify you or your family.

If you have any questions, or problems filling out this questionnaire, feel free to call the following person, who will be happy to help you, or will send an interviewer to help you.

LEE TAYLOR — (206) 323-8481

INSTRUCTIONS

READ EACH QUESTION CAREFULLY.

CIRCLE THE NUMBER OF THE ONE ANSWER THAT MOST CLOSELY FITS THIS CHILD.

Example:

1. HAS THIS CHILD EVER HAD A COLD?

Yes .... [✓ 1]
No 2

FOLLOW ANY INSTRUCTIONS NEXT TO THE NUMBER YOU CIRCLED, WHICH TELL YOU TO GO TO ANOTHER QUESTION OR ANOTHER PAGE.

Example:

22. DOES THIS CHILD WEAR GLASSES?

Yes .... [✓ 1] *—Answer 22-A*
No .... 2 *—Go to 23*

22-A. HOW LONG HAS THIS CHILD BEEN WEARING GLASSES?

(Circle one)

Less than 1 year .... [✓ 1]
About 1 year 2
About 2 years 3
More than 2 years 4

IF THERE ARE NO INSTRUCTIONS AFTER YOUR ANSWER, GO TO THE VERY NEXT QUESTION.

BEGIN ON THE NEXT PAGE →

DO NOT WRITE IN THIS SPACE

CARD 02

COLDS

1. **DURING THE PAST 12 MONTHS, HAS THIS CHILD HAD A COLD?**

Yes .... 1 --*Answer 2* 13/
No .... 2 —*Go to 8, next page*

---

2. **ABOUT HOW MANY COLDS HAS THE CHILD HAD DURING THE PAST 12 MONTHS? (Write in number)**

________ colds in past 12 months 14-15/

---

3. **IN GENERAL, WHEN THIS CHILD HAS HAD A COLD, ABOUT HOW MANY DAYS HAS IT LASTED? (Write in number)**

________ days 16-17/

---

4. **IN GENERAL, WHEN THIS CHILD HAS HAD A COLD, ABOUT HOW MANY DAYS HAS IT KEPT HIM OR HER IN BED FOR ALL OR MOST OF THE DAY? (Write in number; if no days in bed, write "0.")**

________ days in bed 18-19/

---

5. **DURING THE PAST 12 MONTHS, HOW MUCH HAVE THIS CHILD'S COLDS WORRIED OR CONCERNED YOU?**

(Circle one) 20/

A great deal 1
Somewhat 2
A little 3
Not at all 4

---

6. **DURING THE PAST 12 MONTHS, HOW MUCH PAIN OR DISTRESS HAVE THIS CHILD'S COLDS CAUSED HIM OR HER?**

(Circle one) 21/

A great deal 1
Somewhat 2
A little 3
None 4

CARD 02

DO NOT WRITE IN THIS SPACE

7. **DURING THE PAST 12 MONTHS, WHEN THIS CHILD HAS HAD A COLD, HOW MUCH OF THE TIME HAS IT KEPT HIM OR HER FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN OF THAT AGE DO?**

	(Circle one)	
All of the time	1	22/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

EAR INFECTIONS

8. **DURING THE PAST 12 MONTHS, HAS A DOCTOR EVER SAID THAT THIS CHILD HAD A MIDDLE EAR INFECTION? (OTITIS MEDIA, pronounced "oh-TIE-tiss-MEE-dee-a")**

Yes	1	*—Answer 9*	23/
No	2	*—Go to 16, page 6*	

---

9. **ABOUT HOW MANY TIMES IN THE PAST 12 MONTHS, HAS A DOCTOR SAID THIS CHILD HAD AN EAR INFECTION? (Write in number)**

_________ times in last 12 months 24-25/

---

10. **WHEN THE CHILD HAS HAD AN EAR INFECTION, ABOUT HOW MANY DAYS DO YOU FEEL IT USUALLY LASTED, ON THE AVERAGE? (Write in number)**

_________ days 26-27/

---

11. **WHEN THE CHILD HAS HAD AN EAR INFECTION, ABOUT HOW MANY DAYS DO YOU FEEL IT KEPT THE CHILD IN BED FOR ALL OR MOST OF THE DAY? (Write in number; if no days in bed, write "0.")**

_________ days in bed 28-29/

CARD 02

DO NOT WRITE IN THIS SPACE

12. HAS THIS CHILD EVER BEEN TREATED WITH TUBES IN HIS OR HER EARS?

Yes	1	*—Answer 12-A*	30/
No	2	*—Go to 13*	

12-A. DOES THE CHILD CURRENTLY HAVE TUBES IN HIS OR HER EARS?

Yes	1	31/
No	2	

13. DURING THE PAST 12 MONTHS, HOW MUCH PAIN OR DISTRESS HAVE THIS CHILD'S EAR INFECTIONS CAUSED HIM OR HER?

(Circle one) 32/

A great deal	1
Some	2
A little	3
None at all	4

14. DURING THE PAST 12 MONTHS, HOW MUCH HAVE THIS CHILD'S EAR INFECTIONS WORRIED OR CONCERNED YOU?

(Circle one) 33/

A great deal	1
Somewhat	2
A little	3
Not at all	4

15. DURING THE PAST 12 MONTHS, WHEN THIS CHILD HAS HAD AN EAR INFECTION, HOW OFTEN HAS IT KEPT HIM OR HER FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN OF THAT AGE DO?

(Circle one) 34/

All of the time	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5

ECZEMA, ALLERGIC SKIN RASH

DO NOT WRITE IN THIS SPACE

16. IN THE PAST 12 MONTHS, HAS THIS CHILD HAD A RASH THAT LASTED AT LEAST 3 MONTHS?

Yes .... 1 —*Answer 17* 35/
No .... 2 —*Go to 28, page 8*

---

17. HAS A DOCTOR EVER SAID THAT THIS CHILD HAS ECZEMA (EK-ze-ma)?

Yes 1 36/
No 2

---

18. HAS THIS RASH OR ECZEMA INVOLVED THE FACE, NECK, ELBOW, HANDS OR KNEES?

(Circle one) 37/
Yes, 3 or more of these five areas 1
Yes, 2 of these areas 2
Yes, 1 of these areas 3
No, none of these areas 4

---

19. DOES THIS CHILD CURRENTLY HAVE THIS RASH OR ECZEMA? 38/

Yes 1
No 2

---

20. HAVE YOU OR THIS CHILD EVER SEEN A DOCTOR ABOUT THIS RASH OR ECZEMA?

Yes .... 1 —*Answer 21* 39/
No .... 2 —*Go to 24, next page*

---

21. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR FOR SKIN RASH OR ECZEMA?

(Circle one) 40/
Within the past 3 months 1
3 - 6 months ago 2
7 - 12 months ago 3
More than a year ago 4

DO NOT WRITE IN THIS SPACE

22. DID A DOCTOR EVER PRESCRIBE ANY OF THE FOLLOWING FOR THIS CHILD'S SKIN RASH OR ECZEMA? (Circle one number on each line.)

	Yes	No	
A. Pills or liquids to take by mouth	1	2	41/
B. Creams or ointments to put on the skin	1	2	42/
C. Special soaps or bath oils	1	2	43/

23. DID A DOCTOR EVER ADVISE YOU TO DO ANY OF THE FOLLOWING THINGS FOR THIS CHILD TO AVOID ECZEMA OR TO CURE THE RASH? (Circle one number on each line.)

	Yes	No	
A. Avoid certain foods	1	2	44/
B. Avoid certain types of clothing or fabric	1	2	45/
C. Avoid daily baths	1	2	46/
D. Avoid something else (pets, for example)	1	2	47/

24. DOES THIS CHILD CURRENTLY USE ANY OF THE FOLLOWING, WHETHER OR NOT A DOCTOR HAS PRESCRIBED THEM? (Circle one number on each line.)

	Yes	No	
A. Pills or liquids to take by mouth	1	2	48/
B. Creams or ointments to put on the skin	1	2	49/
C. Special soaps or bath oils	1	2	50/

25. DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISCOMFORT HAS ECZEMA OR A SKIN RASH CAUSED THIS CHILD?

	(Circle one)	
A great deal	1	51/
Some	2	
A little	3	
None at all	4	

26. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S ECZEMA OR SKIN RASH WORRIED YOU?

	(Circle one)	
A great deal	1	52/
Somewhat	2	
A little	3	
None at all	4	

CARD 02

DO NOT WRITE IN THIS SPACE

27. DURING THE PAST 3 MONTHS, HOW OFTEN HAS ECZEMA OR A SKIN RASH KEPT THIS CHILD FROM DOING THE KINDS OF THINGS OTHER CHILDREN THAT AGE DO?

(Circle one) 53/

All of the time	1	
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

ANEMIA

28. DURING THE PAST 12 MONTHS, HAS A DOCTOR TOLD YOU THAT THIS CHILD HAS ANEMIA ("a-NEE-mee-a," SOMETIMES CALLED LOW BLOOD) OR IS HE OR SHE CURRENTLY UNDER TREATMENT FOR IT?

(Circle one)

No, child does not have it	1	*—Go to 35, page 10*	54/
Yes, child had it or is under treatment for it	2		
Yes, child had it, but is now cured	3		

29. DURING THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY OF THESE TREATMENTS FOR THIS CHILD'S ANEMIA? (Circle one number on each line.)

	Yes	No	
A. Special diet	1	2	55/
B. Iron pills or shots	1	2	56/
C. Vitamin pills or shots	1	2	57/
D. Blood transfusions	1	2	58/

30. DOES THIS CHILD CURRENTLY TAKE ANY OF THE FOLLOWING TREATMENTS, WHETHER OR NOT A DOCTOR PRESCRIBED THEM? (Circle one number on each line.)

	Yes	No	
A. Special diet	1	2	59/
B. Iron pills or shots	1	2	60/
C. Vitamin pills or shots	1	2	61/
D. Blood transfusions	1	2	62/

CARD 02

DO NOT WRITE IN THIS SPACE

31. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR FOR ANEMIA?

(Circle one) 63/

Within past 3 months	1
3 - 6 months ago	2
7 - 12 months ago	3
More than 1 year ago	4

---

32. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S ANEMIA WORRIED OR CONCERNED YOU?

(Circle one) 64/

A great deal	1
Somewhat	2
A little	3
Not at all	4

---

33. DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAS ANEMIA KEPT THIS CHILD FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN THE SAME AGE DO?

(Circle one) 65/

All of the time	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5

---

34. DURING THE PAST 30 DAYS, HOW MANY DAYS HAS ANEMIA KEPT THIS CHILD IN BED FOR ALL OR MOST OF THE DAY ? (If none, write in "0.")

________ days in bed last month 66-67/

CARD 02

DO NOT WRITE IN THIS SPACE

LEAD POISONING

35. HAS A DOCTOR EVER SAID THAT THIS CHILD HAD LEAD POISONING?

Yes 1 *—Answer 36* 68/
No 2 *—Go to 42, next page*

---

36. DURING THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY MEDICINES FOR THE LEAD POISONING?

Yes 1 69/
No 2

---

37. DOES THIS CHILD CURRENTLY TAKE ANY MEDICINES FOR LEAD POISONING?

Yes 1 70/
No 2

---

38. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR FOR LEAD POISONING?

(Circle one) 71/

Within the past 3 months 1
3 - 6 months ago 2
7 - 12 months ago 3
More than 1 year ago 4

---

39. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S LEAD POISONING WORRIED OR CONCERNED YOU?

(Circle one) 72/

A great deal 1
Somewhat 2
A little 3
Not at all 4

---

40. DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAS LEAD POISONING KEPT THIS CHILD FROM DOING THE KINDS OF THINGS OTHER CHILDREN THAT AGE DO?

(Circle one) 73/

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

CARD 02

DO NOT WRITE IN THIS SPACE

41. **DURING THE PAST 30 DAYS, HOW MANY DAYS HAS LEAD POISONING KEPT THIS CHILD IN BED FOR ALL OR MOST OF THE DAY ? (If none, write in "0.")**

________ days in bed last month 74-75/

CANCER

CARD 03

42. **HAS A DOCTOR EVER TOLD YOU THAT THIS CHILD HAD CANCER?**

Yes	1	*—Answer 43*	13/
No	2	*—Go to 52, page 14*	

---

43. **WHERE IS, OR WAS, THE CANCER LOCATED?**

	(Circle one)	
Eye	01	14-15/
Connective tissue (sarcoma)	02	
Brain and central nervous system	03	
Bone	04	
Adrenal gland (neuroblastoma)	05	
Kidney (Wilms) or urinary tract	06	
Blood (leukemia)	07	
Lymph glands or nodes (lymphoma)	08	
Lung	09	
Liver	10	
Mixed tissues (teratoma)	11	
Somewhere else	12	

Where? ______________________________

---

44. **WHEN WAS THE CANCER FIRST DIAGNOSED? (WHEN WERE YOU FIRST TOLD ABOUT IT?)**

	(Circle one)	
Within the past 6 months	1	16/
6 months to 1 year ago	2	
2 - 3 years ago	3	
More than 3 years ago	4	

DO NOT WRITE IN THIS SPACE

45. WHEN WAS THE LAST TIME THE CHILD HAD ANY PAIN OR DISCOMFORT FROM CANCER?

(Circle one)

Within the past 6 months	1	*—Answer 45-A*	17/
6 months to 1 year ago	2	*—Go to 46,*	
More than 1 year ago	3		
Never had pain or discomfort	4		

45-A. DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISCOMFORT HAS THE CANCER CAUSED THE CHILD?

(Circle one) 18/

A great deal	1
Some	2
A little	3
None at all	4

---

46. DURING THE PAST 3 MONTHS, HOW MUCH HAS THE CANCER WORRIED OR CONCERNED YOU?

(Circle one) 19/

A great deal	1
Somewhat	2
A little	3
Not at all	4

---

47. DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAS THE CANCER KEPT THE CHILD FROM DOING THE KINDS OF THINGS OTHER CHILDREN THAT AGE DO?

(Circle one) 20/

All of the time	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5

---

48. DURING THE PAST 30 DAYS, HOW MANY DAYS HAS THE CANCER KEPT THE CHILD IN BED FOR ALL OR MOST OF THE DAY? (If none, write in "0.")

________ days in bed last month 21-22/

CARD 03

DO NOT WRITE IN THIS SPACE

49. HOW RECENTLY HAS THE CHILD HAD AN OPERATION TO REMOVE THE CANCER?

(Circle one) 23/

Less than 6 months ago	1
6 months to 1 year ago	2
More than 1 year to 3 years ago	3
More than 3 years ago	4
Never had an operation	5

---

50. HOW RECENTLY HAS HE OR SHE HAD ANY RADIATION TO STOP THE CANCER?

(Circle one) 24/

Less than 6 months ago	1
6 months to 1 year ago	2
More than 1 year to 3 years ago	3
More than 3 years ago	4
Never had radiation	5

---

51. HOW RECENTLY HAS HE OR SHE TAKEN ANY MEDICINE (PILLS, LIQUIDS, OR SHOTS) TO STOP THE CANCER?

(Circle one) 25/

Less than 6 months ago	1
6 months to 1 year ago	2
More than 1 year to 3 years ago	3
More than 3 years ago	4
Never took medicine	5

CARD 03

FEVER CONVULSIONS, EPILEPSY, CONVULSIONS

DO NOT WRITE IN THIS SPACE

52. HAS THIS CHILD EVER HAD A FEVER CONVULSION (con-VULL-shun), THAT IS, A FIT OR SEIZURE WITH A HIGH FEVER?

Yes .... 1. *—Answer 52-A* 26/
No .... 2 *—Go to 53*

52-A. HAS THIS CHILD EVER HAD A CONVULSION, FIT, OR SEIZURE WITHOUT A HIGH FEVER?

Yes .... 1 *—Answer 52-B* 27/
No .... 2 *—Go to 54*

52-B. HAS A DOCTOR EVER SAID THAT THIS CHILD HAS EPILEPSY (EPP-i-lep-see)?

Yes .... 1 } *—Go to 54* 28/
No .... 2 }

---

53. HAS THIS CHILD EVER HAD A CONVULSION, FIT, OR SEIZURE WITHOUT A HIGH FEVER?

Yes .... 1 *—Answer 53-A* 29/
No .... 2 *—Go to 63, page 16*

53-A. HAS A DOCTOR EVER SAID THAT THIS CHILD HAS EPILEPSY (EPP-i-lep-see)?

Yes .... 1 } *—Go to 54* 30/
No .... 2 }

---

54. WHEN WAS THE LAST TIME THIS CHILD HAD A FEVER CONVULSION, FIT, SEIZURE, OR ATTACK OF EPILEPSY?

(Circle one) 31/

Within the past 12 months 1
1 - 2 years ago 2
3 or more years ago 3

CARD 03

DO NOT WRITE IN THIS SPACE

55. **DURING THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY MEDICINE FOR THE FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS?**

Yes	1	32/
No	2	

---

56. **DOES THIS CHILD CURRENTLY TAKE ANY MEDICINES FOR FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS, WHETHER OR NOT A DOCTOR PRESCRIBED THEM?**

Yes	1	33/
No	2	

---

57. **WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR ABOUT FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS?**

(Circle one) 34/

Within the past 3 months	1
3 - 6 months ago	2
7 - 12 months ago	3
More than 1 year ago	4

---

58. **DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISTRESS HAVE FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS CAUSED THIS CHILD?**

(Circle one) 35/

A great deal	1
Some	2
A little	3
None	4

---

59. **DURING THE PAST 3 MONTHS, HOW MUCH HAVE THIS CHILD'S FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS WORRIED OR CONCERNED YOU?**

(Circle one) 36/

A great deal	1
Somewhat	2
A little	3
Not at all	4

---

60. **DURING THE PAST 3 MONTHS, HOW MANY ATTACKS OF FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS HAS THIS CHILD HAD? (Write in number; if none, write in "0.")**

________ attacks in the past 3 months 37-38/

CARD 03

DO NOT WRITE IN THIS SPACE

61. **DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAVE FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS KEPT THIS CHILD FROM DOING THE KINDS OF THINGS OTHER CHILDREN THAT AGE DO?**

(Circle one) 39/

All of the time	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5

62. **DURING THE PAST 30 DAYS, HOW MANY DAYS HAVE FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS KEPT THIS CHILD IN BED ALL OR MOST OF THE DAY? (If none, write "0.")**

_______ days in bed last month 40-41/

TONSILS, ADENOIDS

63. **HAS THIS CHILD EVER HAD TONSILS OR ADENOIDS REMOVED?**

(Circle one) 42/

Yes, tonsils only	1
Yes, adenoids only	2
Yes, both tonsils and adenoids	3
No	4

DRUG ALLERGY

64. **IS THIS CHILD ALLERGIC TO PENICILLIN? (Pen-ih-SIL-in)**

(Circle one) 43/

Yes	1
No	2
Don't know	3

65. **IS HE OR SHE ALLERGIC TO AMPICILLIN? (Am-pih-SIL-in)**

(Circle one) 44/

Yes	1
No	2
Don't know	3

CARD 03

MISSING LIMBS

DO NOT WRITE IN THIS SPACE

66. **DOES THIS CHILD HAVE ANY MISSING LIMBS — THAT IS, ARMS, LEGS, OR FINGERS THAT ARE MISSING OR HAVE BEEN AMPUTATED?**

Yes	1	*—Answer 67*	45/
No	2	*—Go to 69, page 19*	

---

67. **IS AN UPPER LIMB MISSING?**

Yes	1	*—Answer 67-A-B*	46/
No	2	*—Go to 68, next page*	

67-A. **PLEASE CIRCLE ONE NUMBER TO INDICATE ANY MISSING PART ON THE RIGHT SIDE. IF NOT ON RIGHT SIDE, CIRCLE "5"; THEN ANSWER 67-B.**

	(Circle one)	
Right arm above elbow	1	47/
Right arm below elbow	2	
Right arm at the wrist	3	
1 or more fingers on right hand	4	
Not on right side	5	

67-B. **PLEASE CIRCLE ONE NUMBER TO INDICATE ANY MISSING PART ON THE LEFT SIDE. IF NOT ON LEFT SIDE, CIRCLE "5."**

	(Circle one)	
Left arm above elbow	1	48/
Left arm below elbow	2	
Left arm at the wrist	3	
1 or more fingers on left hand	4	
Not on left side	5	

CARD 03

DO NOT WRITE IN THIS SPACE

68. IS A LOWER LIMB MISSING?

Yes	1	*—Answer 68-A-B*
No	2	*—Go to 69, next page*

49/

68-A. PLEASE CIRCLE ONE NUMBER TO INDICATE ANY MISSING PART ON THE RIGHT SIDE. IF NOT ON RIGHT SIDE, CIRCLE "4."

50/

	(Circle one)
Right leg above knee	1
Right leg below knee	2
Right leg at ankle	3
Not on right side	4

68-B. PLEASE CIRCLE ONE NUMBER TO INDICATE ANY MISSING PART ON THE LEFT SIDE. IF NOT ON LEFT SIDE, CIRCLE "4."

51/

	(Circle one)
Left leg above knee	1
Left leg below knee	2
Left leg at ankle	3
Not on left side	4

OTHER ILLNESSES

DO NOT WRITE IN THIS SPACE

69. AS FAR AS YOU KNOW, DURING THE PAST 12 MONTHS, HAS THIS CHILD HAD ANY OF THE FOLLOWING CONDITIONS?

IF YES, DID YOU SEE A DOCTOR ABOUT IT DURING THE PAST 12 MONTHS?

PLEASE CIRCLE ONE NUMBER ON EACH LINE:

1 — Child has not had the condition at all in the past 12 months

2 — Child has had it, but has not seen a doctor about it in the past 12 months

3 — Child has had it, and has seen a doctor about it in the past 12 months

DURING THE PAST 12 MONTHS, HAS CHILD HAD . . .	No, did not have this	Had it, but did not see doctor	Had it, and saw doctor	
A. Heart trouble or congenital heart trouble	1	2	3	52/
B. Cerebral palsy	1	2	3	53/
C. Kidney or bladder trouble or urine trouble	1	2	3	54/
D. Asthma	1	2	3	55/
E. Mental retardation, or development delay or lag	1	2	3	56/
F. Hernia, other than umbilical hernia	1	2	3	57/

CARD 03

MEDICAL APPLIANCES

DO NOT WRITE IN THIS SPACE

70. DOES THIS CHILD OWN EYEGLASSES OR CONTACT LENSES WHICH CORRECT HIS OR HER VISION?

Yes .... 1 *—Answer 70-A-B* 58/
No .... 2 *—Go to 71, next page*

70-A. WHEN WAS THE LAST TIME THE CHILD GOT A NEW PAIR OF EYEGLASSES OR CONTACT LENSES?

(Circle one) 59/

Less than 6 months ago 1
6 - 11 months ago 2
1 year ago, but less than 2 years 3
2 years ago, but less than 3 years 4
3 or more years ago 5

70-B. DID HE OR SHE OWN EYEGLASSES OR CONTACT LENSES BEFORE THAT TIME?

Yes .... 1 *—Answer 70-C* 60/
No .... 2 *—Go to 71, next page*

70-C. WHEN WAS THE LAST TIME THE CHILD GOT A NEW PAIR OF EYEGLASSES OR CONTACT LENSES BEFORE THAT TIME? — JUST YOUR BEST GUESS.

(Circle one) 61/

Less than 6 months before that 1
6 to 11 months before that 2
1 year before that, but less than 2 years 3
2 years before that, but less than 3 years 4
3 or more years before that 5

CARD 03

DO NOT WRITE IN THIS SPACE

71. DOES THIS CHILD OWN A HEARING AID?

Yes	1	*—Answer 71-A-B*	62/
No	2	*—Go to 72, next page*	

71-A. WHEN WAS THE LAST TIME THE CHILD GOT A NEW HEARING AID?

	(Circle one)	
Less than 6 months ago	1	63/
6 to 11 months ago	2	
1 year ago, but less than 2 years	3	
2 years ago, but less than 3 years	4	
3 or more years ago	5	

71-B. DID HE OR SHE OWN A HEARING AID BEFORE THAT TIME?

Yes	1	*—Answer 71-C*	64/
No	2	*—Go to 72, next page*	

71-C. WHEN WAS THE LAST TIME THE CHILD GOT A NEW HEARING AID BEFORE THAT TIME? — JUST YOUR BEST GUESS.

	(Circle one)	
Less than 6 months before that	1	65/
6 to 11 months before that	2	
1 year before that, but less than 2 years	3	
2 years before that, but less than 3 years	4	
3 or more years ago	5	

DO NOT WRITE IN THIS SPACE

FUTURE HEALTH EXPENSES

72. **OF COURSE, NOBODY KNOWS WHAT WILL HAPPEN, BUT WE WOULD JUST LIKE YOUR BEST GUESS ON HOW MUCH THIS CHILD'S OWN PERSONAL HEALTH CARE WILL COST DURING THE NEXT 12 MONTHS. (DO NOT COUNT OTHER CHILDREN OR OTHER MEMBERS OF THE FAMILY.)**

INCLUDE DOCTORS, DENTIST, CLINICS, MEDICAL TESTS OR X-RAYS, PRESCRIPTION DRUGS — THE TOTAL OF ALL EXPENSES FOR THIS CHILD'S PERSONAL HEALTH DURING THE NEXT 12 MONTHS.

INCLUDE BOTH WHAT YOU ARE LIKELY TO PAY, AND ALSO WHAT WILL BE PAID BY INSURANCE, MEDICARE, MEDICAID, OR OTHERS.

	(Circle one)
$100 or less	01
$101 - $200	02
$201 - $300	03
$301 - $400	04
$401 - $500	05
$501 - $600	06
$601 - $700	07
$701 - $800	08
$801 - $900	09
$901 - $1000	10
More than $1,000	11

66-67/

CARD 03

DO NOT
WRITE IN
THIS SPACE

THANK YOU.

THAT IS ALL THE QUESTIONS WE HAVE NOW.

PLEASE FILL OUT THE 2 OR 3 ITEMS BELOW, THEN PUT THIS QUESTIONNAIRE IN THE ENVELOPE PROVIDED.

---

73. PLEASE WRITE IN THE DATE THIS QUESTIONNAIRE WAS COMPLETED:

____

---

74. IF YOU HAVE ANY COMMENTS YOU WOULD LIKE TO MAKE ABOUT THIS QUESTIONNAIRE, OR THE SURVEY IN GENERAL, PLEASE WRITE THEM IN BELOW.

---

75. DID THE PERSON WHO WAS ASKED TO FILL OUT THE QUESTIONNAIRE DO IT, OR DID SOMEONE ELSE FILL IT OUT?

Person who was asked	1		68/
Someone else filled it out	2	*—Answer 75-A-B*	

75-A. WHAT IS THE MAIN REASON THE PERSON WHO WAS ASKED DID NOT FILL IT OUT?

Can't read well enough	1	69/
Has poor eyesight	2	
Has trouble writing	3	
Trouble understanding English	4	
Form is too complicated	5	
Is away from home	6	
Some other reason	7	

What? ________________________________

75-B. PLEASE WRITE IN NAME OF PERSON WHO FILLED IT OUT:

____

MEDICAL HISTORY QUESTIONNAIRE (SEATTLE)

FORM B **Ages 0-4**

SDP: ▨ 01-10/

CARD 01 11-12/

HH: ☒ 13-20/

FAMILY UNIT #: ☐ 21/

☐ of ☐ 22-23/

FU: ☒ 24-31/

HIEI: 1 2 2 32-34/

FILLED OUT ABOUT: ☒ 35-42/

FILLED OUT BY: ☒ 43-50/

☐☐☐☐☐☐☐☐ 51-58/
Month Day Year

KEYPUNCH VERIFICATION ☐ 59/

REC. Yes . . . . . 1 No 2 60/
REC. COMP. Yes . . . . . 1 No 2 61/

NORC: 4230-MHQ
11/75
OMB #85-R-0238
Expires: 12/80

Health Insurance Study
Seattle, Washington

MEDICAL HISTORY QUESTIONNAIRE

FORM A

Ages 5-13

TO BE FILLED OUT ABOUT: ____________________

TO BE FILLED OUT BY: ____________________
(Adult in family who knows the most about this child's health)

A NOTE ABOUT THIS QUESTIONNAIRE

This Medical History will provide the Health Insurance Study with important information about the past and current health of participants.

The information will in no way affect your insurance. The information is strictly confidential and will not be used or released except in statistical reports (except if required by law) and will not identify you or your family.

If you have any questions, or problems filling out this questionnaire, feel free to call the following person, who will be happy to help you, or will send an interviewer to help you.

LEE TAYLOR — (206) 323-8481

INSTRUCTIONS

READ EACH QUESTION CAREFULLY.

CIRCLE THE NUMBER OF THE ONE ANSWER THAT MOST CLOSELY FITS THIS CHILD.

Example:

1. HAS THIS CHILD EVER HAD A COLD?

Yes .... ①
No 2

FOLLOW ANY INSTRUCTIONS NEXT TO THE NUMBER YOU CIRCLED, WHICH TELL YOU TO GO TO ANOTHER QUESTION OR ANOTHER PAGE.

Example:

22. DOES THIS CHILD WEAR GLASSES?

Yes .... ① *—Answer 22-A*
No .... 2 *—Go to 23*

22-A. HOW LONG HAS THIS CHILD BEEN WEARING GLASSES?

(Circle one)
Less than 1 year .... ①
About 1 year 2
About 2 years 3
More than 2 years 4

IF THERE ARE NO INSTRUCTIONS AFTER YOUR ANSWER, GO TO THE VERY NEXT QUESTION.

BEGIN ON THE NEXT PAGE ⟶

HEIGHT AND WEIGHT

DO NOT WRITE IN THIS SPACE

CARD 02

1. **HOW MUCH DID THIS CHILD WEIGH AT BIRTH?**

_________ pounds, _________ ounces. 13-16/

---

2. **WAS THIS CHILD BORN PREMATURELY? (THAT IS, EARLY, OR NOT CARRIED AT LEAST 8½ MONTHS.)**

	(Circle one)	
Yes, born prematurely	1	17/
No, not born prematurely	2	
Don't know	3	

---

3 **HOW TALL IS THIS CHILD NOW, WITHOUT SHOES ON?**

_________ feet, _________ inches 18-20/

---

4. **HOW MUCH DOES THIS CHILD WEIGH NOW, WITHOUT HEAVY CLOTHING?**

_________ pounds 21-23/

CARD 02

GENERAL HEALTH

DO NOT WRITE IN THIS SPACE

5. **IN GENERAL, WOULD YOU SAY THIS CHILD'S HEALTH IS EXCELLENT, GOOD, FAIR, OR POOR?**

	(Circle one)	
Excellent	1	24/
Good	2	
Fair	3	
Poor	4	

---

6. **DURING THE PAST 3 MONTHS, HOW MUCH HAVE YOU WORRIED ABOUT THIS CHILD'S HEALTH?**

	(Circle one)	
A great deal	1	25/
Somewhat	2	
A little	3	
Not at all	4	

---

7. **DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISTRESS HAS THIS CHILD'S HEALTH CAUSED HIM OR HER?**

	(Circle one)	
A great deal	1	26/
Some	2	
A little	3	
None at all	4	

---

8. **DOES THIS CHILD'S HEALTH LIMIT HIM OR HER IN ANY WAY IN USING PUBLIC TRANSPORTATION OR A BICYCLE?**

	(Circle one)		
Yes	1	*—Answer 8-A*	27/
No	2	*—Go to 9, next page*	

8-A. **HOW LONG HAS THIS CHILD'S HEALTH LIMITED HIM OR HER IN USING PUBLIC TRANSPORTATION OR A BICYCLE?**

	(Circle one)	
Less than 1 month	1	28/
1 - 3 months	2	
More than 3 months	3	

CARD 02

DO NOT WRITE IN THIS SPACE

9. DOES THIS CHILD NEED HELP IN GETTING AROUND THE NEIGHBORHOOD BECAUSE OF HEALTH?

Yes	1	*—Answer 9-A*	29/
No	2	*—Go to 10*	

9-A. HOW LONG HAS THE CHILD NEEDED HELP IN GETTING AROUND THE NEIGHBORHOOD BECAUSE OF HEALTH?

(Circle one)

Less than 1 month	1	30/
1 - 3 months	2	
More than 3 months	3	

---

10. DOES THIS CHILD HAVE TO STAY INDOORS MOST OR ALL OF THE DAY BECAUSE OF HEALTH?

Yes	1	*—Answer 10-A*	31/
No	2	*—Go to 11*	

10-A. HOW LONG HAS THE CHILD HAD TO STAY INDOORS BECAUSE OF HEALTH?

(Circle one)

Less than 1 month	1	32/
1 - 3 months	2	
More than 3 months	3	

---

11. IS THIS CHILD IN BED OR A CHAIR FOR MOST OR ALL OF THE DAY BECAUSE OF HEALTH?

Yes	1	*—Answer 11-A*	33/
No	2	*—Go to 12, next page*	

11-A. HOW LONG HAS THE CHILD BEEN IN BED OR A CHAIR FOR MOST OR ALL OF THE DAY BECAUSE OF HEALTH?

(Circle one)

Less than 1 month	1	34/
1 - 3 months	2	
More than 3 months	3	

DO NOT WRITE IN THIS SPACE

12. **DOES THIS CHILD'S HEALTH LIMIT THE KIND OR AMOUNT OF VIGOROUS ACTIVITIES HE OR SHE CAN DO, SUCH AS RUNNING, LIFTING HEAVY OBJECTS OR TAKING PART IN STRENUOUS SPORTS?**

Yes, health limits these activities	1	*—Answer 12-A*	35/
No	2	*—Go to 13*	

12-A. **HOW LONG HAS THE CHILD'S HEALTH LIMITED THE VIGOROUS ACTIVITIES HE OR SHE CAN DO?**

(Circle one)

Less than 1 month	1	36/
1 - 3 months	2	
More than 3 months	3	

---

13. **DOES THIS CHILD HAVE TROUBLE EITHER WALKING SEVERAL BLOCKS OR CLIMBING A FEW FLIGHTS OF STAIRS BECAUSE OF HEALTH?**

Yes	1	*—Answer 13-A*	37/
No	2	*—Go to 14*	

13-A. **HOW LONG HAS THE CHILD HAD TROUBLE WALKING SEVERAL BLOCKS OR CLIMBING A FEW FLIGHTS OF STAIRS BECAUSE OF HEALTH?**

(Circle one)

Less than 1 month	1	38/
1 - 3 months	2	
More than 3 months	3	

---

14. **DOES THIS CHILD HAVE TROUBLE BENDING, LIFTING, OR STOOPING BECAUSE OF HEALTH?**

Yes	1	*—Answer 14-A*	39/
No	2	*—Go to 15, next page*	

14-A. **HOW LONG HAS THE CHILD HAD TROUBLE BENDING, LIFTING, OR STOOPING?**

(Circle one)

Less than 1 month	1	40/
1 - 3 months	2	
More than 3 months 3		

CARD 02

DO NOT WRITE IN THIS SPACE

15. BECAUSE OF HEALTH, DOES THIS CHILD HAVE TROUBLE EITHER WALKING ONE BLOCK OR CLIMBING ONE FLIGHT OF STAIRS?

Yes	1	*—Answer 15-A*	41/
No	2	*—Go to 16*	

15-A. HOW LONG HAS THE CHILD HAD TROUBLE EITHER WALKING ONE BLOCK OR CLIMBING ONE FLIGHT OF STAIRS?

(Circle one)

Less than 1 month	1	42/
1 - 3 months	2	
More than 3 months	3	

---

16. IS THIS CHILD UNABLE TO WALK, UNLESS ASSISTED BY AN ADULT OR BY A CANE, CRUTCHES, ARTIFICIAL LIMB, OR BRACES?

Yes, unable to walk	1	*—Answer 16-A*	43/
No, no trouble walking	2	*—Go to 17*	

16-A. HOW LONG HAS THE CHILD BEEN UNABLE TO WALK WITHOUT ASSISTANCE?

(Circle one)

Less than 1 month	1	44/
1 - 3 months	2	
More than 3 months	3	

---

17. DOES HEALTH LIMIT THIS CHILD IN ANY WAY (FROM DOING ANYTHING HE OR SHE WANTS TO DO)?

Yes	1	*—Answer 17-A*	45/
No	2	*—Go to 18, next page*	

17-A. HOW LONG HAS THE CHILD'S HEALTH LIMITED HIM OR HER IN DOING THINGS HE OR SHE WANTS TO DO?

(Circle one)

Less than 1 month	1	46/
1 - 3 months	2	
More than 3 months	3	

CARD 02

DO NOT WRITE IN THIS SPACE

18. IS THIS CHILD UNABLE TO DO CERTAIN KINDS OR AMOUNTS OF SCHOOLWORK BECAUSE OF HEALTH? (Consider kindergarten or nursery school as school.)

Yes	1	*—Answer 18-A*	47/
No	2	*—Go to 19*	

18-A. HOW LONG HAS THE CHILD BEEN UNABLE TO DO CERTAIN KINDS OR AMOUNTS OF SCHOOLWORK BECAUSE OF HEALTH?

	(Circle one)	
Less than 1 month	1	48/
1 - 3 months	2	
More than 3 months	3	

---

19. DOES THIS CHILD'S HEALTH KEEP HIM OR HER FROM GOING TO SCHOOL? (Consider kindergarten or nursery school as school.)

Yes	1	*—Answer 19-A*	49/
No	2	*—Go to 20*	

19-A. HOW LONG HAS THE CHILD'S HEALTH KEPT HIM OR HER FROM GOING TO SCHOOL?

	(Circle one)	
Less than 1 month	1	50/
1 - 3 months	2	
More than 3 months	3	

---

20. BECAUSE OF HEALTH, DOES THIS CHILD NEED HELP WITH EATING, DRESSING, BATHING, OR USING THE TOILET?

Yes	1	*—Answer 20-A*	51/
No	2	*—Go to 21 next page*	

20-A. HOW LONG HAS THE CHILD NEEDED HELP WITH EATING, DRESSING, BATHING, OR USING THE TOILET?

	(Circle one)	
Less than 1 month	1	52/
1 - 3 months	2	
More than 3 months	3	

DO NOT WRITE IN THIS SPACE

FLUORIDES, DIET

21. DOES THIS CHILD USE FLUORIDE (FLORE-eyed) IN ANY OF THESE WAYS? Please circle one number on each line.

	Yes	No	Don't know	
A. Fluoridated toothpaste?	1	2	3	53/
B. Fluoride tablets on a regular basis?	1	2	3	54/
C. Fluoride mouthwash on a regular basis?	1	2	3	55/
D. Did the child ever have his teeth painted with fluoride by a dentist or dental assistant?	1	2	3	56/
E. Does the child use any fluoride-vitamin preparation?	1	2	3	57/
F. Fluoride drops on a regular basis?	1	2	3	58/

---

22. HOW OFTEN DOES THIS CHILD EAT SOMETHING IN BETWEEN REGULAR MEALS?

	(Circle one)	
4 or more times a day	1	59/
3 times a day	2	
About twice a day	3	
Maybe once a day	4	
Occasionally, not every day	5	
Rarely or never eats between meals	6	

---

23. DURING THE PAST 24 HOURS, DID THIS CHILD EAT ANY OF THE FOODS LISTED BELOW? (Circle one number on each line. If the child ate even a little, circle 1 for "Yes." If he or she did not eat it at all, circle 2 for "No.")

	Yes	No	
A. Sugar-coated cereal	1	2	60/
B. Cookies, cake, pie, doughnuts	1	2	61/
C. Soda pop, cola drink	1	2	62/
D. Peanut butter	1	2	63/
E. Jelly or honey	1	2	64/
F. Raisins, figs, prunes	1	2	65/
G. Chewing gum	1	2	66/
H. Candy	1	2	67/
I. Sugar (table sugar)	1	2	68/

CARD 02

DO NOT WRITE IN THIS SPACE

24. **IF THE CHILD ATE ANY OF THESE FOODS IN THE PAST 24 HOURS, DID HE OR SHE EAT THEM ONLY DURING REGULAR MEALS (BREAKFAST, LUNCH OR DINNER), OR ONLY BETWEEN REGULAR MEALS, OR BOTH DURING AND BETWEEN MEALS?**

(Circle one)

Regular meals only	1	69/
Between meals only	2	
Both during meals and between meals	3	
Did not eat any of these foods in past 24 hours ..	4	

---

25. **DURING THE PAST 24 HOURS, HOW MANY TIMES DID THE CHILD EAT OR DRINK THE FOODS LISTED BELOW? (Circle one number on each line)**

	None	One time	Twice	Three times	Four or more	Don't know	
A. Milk (whole milk, skim milk, or low-fat)	0	1	2	3	4	5	70/
B. Custard	0	1	2	3	4	5	71/
C. Cheese	0	1	2	3	4	5	72/
D. A milk-shake (or frappe)	0	1	2	3	4	5	73/
E. A malted milk	0	1	2	3	4	5	74/

CARD 02

IMMUNIZATIONS, SAFETY

DO NOT WRITE IN THIS SPACE

CARD 03

26. SINCE THIS CHILD WAS 4 YEARS OLD, HAS HE OR SHE RECEIVED THESE SHOTS OR IMMUNIZATIONS?

A.	**A tetanus booster?**	Yes	1	13/
		No	2	
B.	**A polio booster?**	Yes	1	14/
		No	2	

27. HOW MUCH OF THE TIME DOES THIS CHILD USE A SEAT BELT WHEN RIDING IN A CAR OR TRUCK?

(Circle one)

All of the time	1	15/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	
Never rides in car or truck	6	

28. HOW FAR CAN THIS CHILD SWIM WITHOUT THE HELP OF AN ADULT?

(Circle one)

Can't swim at all	1	16/
Swims less than 5 feet	2	
Swims 5 to 15 feet	3	
Swims more than 15 feet	4	

29. HOW MUCH OF THE TIME IS THIS CHILD CAREFUL WHEN CROSSING THE STREET OR RIDING A BICYCLE?

(Circle one)

Careful all of the time	1	17/
Careful most of the time	2	
Careful some of the time	3	
Careful a little of the time	4	
Not careful at all	5	

30. DO YOU FEEL THAT DOCTORS HAVE SPENT ENOUGH TIME TALKING WITH YOU ABOUT ACCIDENT PREVENTION FOR THIS CHILD?

(Circle one)

They've spent too much time talking about this	1	18/
Yes, enough time	2	
No, not enough time	3	
Haven't talked with a doctor about this	4	

LEARNING

DO NOT WRITE IN THIS SPACE

31. DURING THE PAST 3 MONTHS, HOW WELL HAS THIS CHILD DONE IN SCHOOL?

(Circle one)

Not in school	1	—*Go to 35, next page*	19/
Very well, excellent student	2		
Quite well, good student	3		
Pretty well, average student	4		
Not too well, below average student	5	—Answer 32-33-34	
Not well at all, poor student	6		

---

32. HAVE YOU OR THIS CHILD EVER SEEN A DOCTOR ABOUT THIS CHILD'S PROBLEMS WITH SCHOOL WORK?

Yes	1	—*Answer 32-A*	20/
No	2	—*Go to 33*	

32-A. WHEN WAS THE LAST TIME YOU OR THE CHILD SAW A DOCTOR ABOUT THE CHILD'S PROBLEMS WITH SCHOOL WORK?

(Circle one)

Within past 3 months	1	21/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

---

33. HAVE YOU OR THIS CHILD EVER TALKED WITH A TEACHER, OR COUNSELOR, OR SCHOOL NURSE ABOUT THE CHILD'S PROBLEMS WITH SCHOOL WORK?

Yes	1	—*Answer 33-A*	22/
No	2	—*Go to 34, next page*	

33-A. WHEN WAS THE LAST TIME YOU OR THE CHILD SAW A TEACHER, OR COUNSELOR, OR SCHOOL NURSE ABOUT THIS CHILD'S PROBLEMS WITH SCHOOL WORK?

(Circle one)

Within past 3 months	1	23/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

CARD 03

DO NOT WRITE IN THIS SPACE

34. DURING THE PAST 3 MONTHS, HOW MUCH HAVE YOU BEEN WORRIED OR CONCERNED ABOUT THIS CHILD'S PROBLEMS WITH SCHOOL WORK?

(Circle one)

A great deal	1	24/
Somewhat	2	
A little	3	
Not at all	4	

GETTING ALONG

35. DURING THE PAST 3 MONTHS, HOW WELL HAS THIS CHILD GOTTEN ALONG WITH OTHER CHILDREN?

(Circle one)

Very well, no problems	1	*—Answer 35-A*	25/
Quite well, hardly any problems	2		
Pretty well, occasional problems	3	*—Go to 36, next page*	
Not too well, frequent problems	4		
Not well at all, serious problems	5		

35-A. DURING THE PAST 3 MONTHS, HOW WELL HAS THIS CHILD GOTTEN ALONG WITH THE FAMILY?

(Circle one)

Very well, no problems	1	*—Answer 35-B*	26/
Quite well, hardly any problems	2		
Pretty well, occasional problems	3	*—Go to 37, next page*	
Not too well, frequent problems	4		
Not well at all, serious problems	5		

35-B. DURING THE PAST 3 MONTHS, HOW WELL HAS THIS CHILD GOTTEN ALONG IN SCHOOL WITH TEACHER AND CLASSMATES? (Consider nursery school or kindergarten as school)

(Circle one)

Not in school	0	*—Go to 42, page 18*	27/
Very well, no problems	1		
Quite well, hardly any problems	2		
Pretty well, occasional problems	3	*—Go to 38, next page*	
Not too well, frequent problems	4		
Not well at all, serious problems	5		

CARD 03

DO NOT WRITE IN THIS SPACE

36. DURING THE PAST 3 MONTHS, HOW WELL HAS THIS CHILD GOTTEN ALONG WITH THE FAMILY?

(Circle one)

Very well, no problems	1	28/
Quite well, hardly any problems	2	
Pretty well, occasional problems	3	
Not too well, frequent problems	4	
Not well at all, serious problems	5	

---

37. DURING THE PAST 3 MONTHS, HOW WELL HAS THIS CHILD GOTTEN ALONG IN SCHOOL WITH TEACHER AND CLASSMATES? (Consider nursery school or kindergarten as school)

(Circle one)

Not in school	0	29/
Very well, no problems	1	
Quite well, hardly any problems	2	
Pretty well, occasional problems	3	
Not too well, frequent problems	4	
Not well at all, serious problems	5	

---

38. HAVE YOU OR THIS CHILD EVER SEEN A DOCTOR ABOUT THIS CHILD'S PROBLEMS IN GETTING ALONG WITH OTHERS?

Yes	1	*—Answer 38-A*	30/
No	2	*—Go to 39, next page*	

38-A. WHEN WAS THE LAST TIME YOU OR THE CHILD SAW A DOCTOR ABOUT THE CHILD'S PROBLEMS IN GETTING ALONG WITH OTHERS?

(Circle one)

Within past 3 months	1	31/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

DO NOT WRITE IN THIS SPACE

39. **HAVE YOU OR THIS CHILD EVER SEEN A SOCIAL WORKER, OR PSYCHOLOGIST, OR SCHOOL COUNSELOR, OR SCHOOL NURSE ABOUT THIS CHILD'S PROBLEMS IN GETTING ALONG WITH OTHERS?**

Yes .... 1 *—Answer 39-A* 32/
No .... 2 *—Go to 40,*

39-A. **WHEN WAS THE LAST TIME YOU OR THE CHILD SAW A SOCIAL WORKER, OR PSYCHOLOGIST, OR SCHOOL COUNSELOR OR SCHOOL NURSE ABOUT THESE PROBLEMS?**

(Circle one)

Within past 3 months 1 33/
3 - 6 months ago 2
7 - 12 months ago 3
More than 1 year ago 4

---

40. **IS THIS CHILD TAKING ANY MEDICATIONS, SUCH AS RITALIN (RITT-a-lin), WHICH HELPS HIM GET ALONG WITH OTHERS?**

Yes 1 34/
No 2

---

41. **DURING THE PAST 3 MONTHS, HOW MUCH HAVE YOU BEEN WORRIED OR CONCERNED ABOUT THIS CHILD'S PROBLEMS IN GETTING ALONG WITH OTHERS?**

(Circle one)

A great deal 1 35/
Somewhat 2
A little 3
Not at all 4

CARD 03

DO NOT WRITE IN THIS SPACE

GENERAL WELL-BEING

THESE NEXT QUESTIONS ARE ABOUT HOW THE CHILD HAS BEEN FEELING, DURING THIS PAST MONTH.

FOR EACH QUESTION, PLEASE CIRCLE A NUMBER FOR THE ONE ANSWER THAT COMES CLOSEST TO THE WAY THE CHILD HAS BEEN FEELING.

42. HOW MUCH OF THE TIME DID THIS CHILD SEEM TO FEEL LONELY DURING THE PAST MONTH?

	(Circle one)	
All of the time	1	36/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

---

43. HOW MUCH OF THE TIME, DURING THE PAST MONTH, DID THIS CHILD SEEM TO FEEL RELAXED AND FREE OF TENSION?

	(Circle one)	
All of the time	1	37/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

---

44. DURING THE PAST MONTH, HOW MUCH OF THE TIME DID THIS CHILD GENERALLY SEEM TO ENJOY THE THINGS THAT HE OR SHE DID?

	(Circle one)	
All of the time	1	38/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

CARD 03

DO NOT WRITE IN THIS SPACE

45. **HOW MUCH OF THE TIME, DURING THE PAST MONTH, DID THIS CHILD SEEM TO BE DEPRESSED (DOWNHEARTED OR BLUE)?**

(Circle one)

All of the time	1	39/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

---

46. **HOW MUCH OF THE TIME, DURING THE PAST MONTH, DID THIS CHILD SEEM TO BE ABLE TO RELAX WITHOUT DIFFICULTY?**

(Circle one)

All of the time	1	40/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

---

47. **HOW MUCH DID THIS CHILD SEEM TO BE BOTHERED BY NERVOUSNESS OR "NERVES", DURING THE PAST MONTH?**

(Circle one)

Extremely—to the point where he or she could not go to school or do usual activities	1	41/
Very much bothered	2	
Bothered quite a bit by nerves	3	
Bothered some, enough to notice	4	
Bothered just a little by nerves	5	
Not bothered at all by nerves	6	

---

48. **DURING THE PAST MONTH, HOW MUCH OF THE TIME DID THIS CHILD SEEM TO BE RESTLESS, FIDGETY, OR IMPATIENT?**

(Circle one)

All of the time	1	42/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

CARD 03

DO NOT WRITE IN THIS SPACE

49. DURING THE PAST MONTH, HOW MUCH OF THE TIME DID THIS CHILD SEEM TO BE MOODY OR TO BROOD ABOUT THINGS?

(Circle one)

All of the time	1	43/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

---

50. HOW MUCH OF THE TIME, DURING THE PAST MONTH, DID THIS CHILD SEEM TO BE CHEERFUL AND LIGHTHEARTED?

(Circle one)

All of the time	1	44/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

---

51. DURING THE PAST MONTH, DID THIS CHILD SEEM TO BE ANXIOUS OR WORRIED?

(Circle one)

Yes, extremely so, to the point of being sick or almost sick	1	45/
Yes, very much so	2	
Yes, quite a bit	3	
Yes, some	4	
Yes, a little bit	5	
No, not at all	6	

---

52. DURING THE PAST MONTH, HOW MUCH OF THE TIME DID THIS CHILD SEEM TO BE A HAPPY PERSON?

(Circle one)

All of the time	1	46/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

CARD 03

DO NOT WRITE IN THIS SPACE

53. **HOW OFTEN DURING THE PAST MONTH DID THIS CHILD SEEM TO WAKE UP FEELING FRESH AND RESTED?**

(Circle one)

All of the time	1	47/
Most of the time	2	
A good bit of the time	3	
Some of the time	4	
A little of the time	5	
None of the time	6	

SYMPTOMS LIST

54. **DURING THE PAST 30 DAYS, DID THIS CHILD HAVE ANY OF THE FOLLOWING SYMPTOMS? IF HE OR SHE DID HAVE THE SYMPTOM, DID YOU OR THE CHILD SEE A DOCTOR ABOUT IT?**

PLEASE CIRCLE ONE NUMBER ON EACH LINE:

1 — Child did not have the symptom at all in the past 30 days
2 — Child had the symptom, but doctor was not seen
3 — Child had the symptom and a doctor was seen about it

	No, did not have this	Had it, but did not see doctor	Had it, and saw doctor	
A. Chicken pox	1	2	3	48/
B. Stomach ache, without vomiting, for less than 24 hours	1	2	3	49/
C. A stomach "flu" or virus, with vomiting or diarrhea lasting at least 2 days	1	2	3	50/
D. An earache, or earache with fever	1	2	3	51/
E. An infection on the skin, without fever	1	2	3	52/
F. Sore throat with high fever, or tonsillitis	1	2	3	53/
G. Cough with a fever for at least 3 days	1	2	3	54/
H. Allergies (such as to grass or certain foods) without asthma	1	2	3	55/
I. Diarrhea (loose bowel movements) lasting for at least 3 days	1	2	3	56/
J. Poor eating habits	1	2	3	57/
K. Problems doing schoolwork or participating in school activities	1	2	3	58/
L. A convulsion or fit (seizure)	1	2	3	59/
M. Nosebleed	1	2	3	60/
N. A cold or runny nose without fever	1	2	3	61/
O. Head injury, with loss of consciousness or vomiting	1	2	3	62/
P. Burning or pain with urination	1	2	3	63/

CARD 03

HEALTH PERCEPTIONS

DO NOT WRITE IN THIS SPACE

55. PLEASE READ EACH OF THE FOLLOWING STATEMENTS, AND THEN CIRCLE ONE OF THE NUMBERS ON EACH LINE TO INDICATE WHETHER THE STATEMENT IS TRUE OR FALSE FOR THIS CHILD. THERE ARE NO RIGHT OR WRONG ANSWERS.

If a statement is definitely true for the child, circle code 5
If it is mostly true for the child, circle code 4
If you don't know whether it is true or false, circle code 3
If it is mostly false for the child, circle code 2
If it is definitely false for the child, circle code 1

SOME OF THE STATEMENTS MAY LOOK OR SEEM LIKE OTHERS. BUT EACH STATEMENT IS DIFFERENT, AND SHOULD BE RATED BY ITSELF.

	Definitely true	Mostly true	Don't know	Mostly false	Definitely false	
A. This child's health is excellent	5	4	3	2	1	64/
B. This child was so sick once I thought he or she might die	5	4	3	2	1	65/
C. This child seems to resist illness very well	5	4	3	2	1	66/
D. This child seems to be less healthy than other children I know	5	4	3	2	1	67/
E. This child has never been seriously ill	5	4	3	2	1	68/
F. When there is something going around, this child usually catches it	5	4	3	2	1	69/

CARD 03

DO NOT WRITE IN THIS SPACE

MEDICINES TAKEN

56. **THIS QUESTION IS ABOUT THE PRESCRIPTION MEDICINES THIS CHILD HAS TAKEN IN THE PAST 48 HOURS (2 DAYS). IT IS VERY IMPORTANT THAT YOU ANSWER ONLY FOR THAT TIME (THE PAST 48 HOURS) AND ONLY ABOUT PRESCRIPTION MEDICINES THAT THE CHILD ACTUALLY TOOK DURING THAT PERIOD.**

DID THIS CHILD TAKE ANY PRESCRIPTION MEDICINES IN THE PAST 48 HOURS?

Yes .... 1 *—Answer 56-A-B* 70/
No .... 2 *—Go to page 27*

56-A. **HOW MANY DIFFERENT PRESCRIPTION MEDICINES IN THE PAST 48 HOURS? (Write in number)**

_________ prescription medicines 71/

56-B **FOR EACH DIFFERENT TYPE OF MEDICINE THIS CHILD TOOK IN THE PAST 48 HOURS, PLEASE FILL IN THE INFORMATION REQUESTED IN THE BOXES WHICH FOLLOW.**

COPY THE INFORMATION FROM THE LABEL ON THE BOTTLE. IF ANY INFORMATION IS NOT ON THE LABEL, WRITE "NOT ON LABEL."

USE ONE BOX FOR EACH DIFFERENT TYPE OF MEDICINE.

(1) **NAME OF MEDICINE:** ____________________

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ____________________

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME?
(Be sure to say whether it is number of pills, number of teaspoons, or what). ____________________

PRESCRIPTION NUMBER: ____________________ NC

NAME OF PHARMACY (DRUG STORE): ____________________ NC

PHONE NUMBER OF PHARMACY: ____________________ NC

DOSAGE (STRENGTH OF MEDICINE): ____________________ NC

CARD 03

56. **(Continued)**

DO NOT WRITE IN THIS SPACE

(2) **NAME OF MEDICINE:** ______

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ______

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ______

PRESCRIPTION NUMBER: ______ NC

NAME OF PHARMACY (DRUG STORE): ______ NC

PHONE NUMBER OF PHARMACY: ______ NC

DOSAGE (STRENGTH OF MEDICINE): ______ NC

(3) **NAME OF MEDICINE:** ______

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ______

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ______

PRESCRIPTION NUMBER: ______ NC

NAME OF PHARMACY (DRUG STORE): ______ NC

PHONE NUMBER OF PHARMACY: ______ NC

DOSAGE (STRENGTH OF MEDICINE): ______ NC

56. **(Continued)**

DO NOT WRITE IN THIS SPACE

(4) **NAME OF MEDICINE:** ______________________

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ______________________

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ______________________

PRESCRIPTION NUMBER: ______________________ NC

NAME OF PHARMACY (DRUG STORE): ______________________ NC

PHONE NUMBER OF PHARMACY: ______________________ NC

DOSAGE (STRENGTH OF MEDICINE): ______________________ NC

(5) **NAME OF MEDICINE:** ______________________

INSTRUCTIONS:

HOW OFTEN DOES THE LABEL INSTRUCT THIS CHILD TO TAKE THE MEDICINE? ______________________

HOW MUCH SHOULD THIS CHILD TAKE EACH TIME? (Be sure to say whether it is number of pills, number of teaspoons, or what). ______________________

PRESCRIPTION NUMBER: ______________________ NC

NAME OF PHARMACY (DRUG STORE): ______________________ NC

PHONE NUMBER OF PHARMACY: ______________________ NC

DOSAGE (STRENGTH OF MEDICINE): ______________________ NC

MEDICAL HISTORY QUESTIONNAIRE (SEATTLE)

FORM A MEDICINES SUPPLEMENT

Ages 5-13

NORC CASE #: ☐☐☐☐☐☐

HH: ☒

FAMILY UNIT #: ☐

FU: ☒

HIEI: 1 1 8

FILLED OUT ABOUT: ☒

FILLED OUT BY: ☒

☐☐☐☐☐☐☐☐
Month Day Year

KEYPUNCH VERIFICATION ☐

DO NOT WRITE IN THIS SPACE

THANK YOU. THESE ARE ALL THE QUESTIONS WE HAVE ABOUT THIS CHILD NOW.

PLEASE FILL OUT THE 2 OR 3 ITEMS BELOW, THEN PUT THIS QUESTIONNAIRE IN THE ENVELOPE PROVIDED.

---

57. PLEASE WRITE IN THE DATE THIS QUESTIONNAIRE WAS COMPLETED:

____

---

58. IF YOU HAVE ANY COMMENTS YOU WOULD LIKE TO MAKE ABOUT THIS CHILD'S HEALTH OR ABOUT THIS QUESTIONNAIRE, PLEASE WRITE THEM IN BELOW.

---

59. DID THE PERSON WHO WAS ASKED TO FILL OUT THE QUESTIONNAIRE DO IT, OR DID SOMEONE ELSE FILL IT OUT?

Person who was asked	1	72/
Someone else filled it out	2	

59-A. WHAT IS THE MAIN REASON THE PERSON WHO WAS ASKED DID NOT FILL IT OUT?

(Circle one)

Can't read well enough	1	73/
Has poor eyesight	2	
Has trouble writing	3	
Trouble understanding English	4	
Form is too complicated	5	
Is away from home	6	
Some other reason	7	

What? ______________________________

59-B. PLEASE WRITE IN NAME OF PERSON WHO FILLED IT OUT:

____

CARD 03

MEDICAL HISTORY QUESTIONNAIRE (SEATTLE)

FORM A **Ages 5-13**

SDP:	▨	01-10/
	CARD 01	11-12/
HH:	☒	13-20/
FAMILY UNIT #:	☐	21/
# ☐ of ☐		22-23/
FU:	☒	24-31/
HIEI:	1 1 7	32-34/
FILLED OUT ABOUT:	☒	35-42/
FILLED OUT BY:	☒	43-50/
☐☐ ☐☐ ☐☐☐☐ Month Day Year		51-58/
KEYPUNCH VERIFICATION	☐	59/

REC. Yes . . . . . 1 No 2 60/
REC. COMP. Yes . . . . . 1 No 2 61/

NORC: 4230-MHQ
11/75
OMB #85-R-0238
Expires: 12/80

Health Insurance Study
Seattle, Washington

MEDICAL HISTORY QUESTIONNAIRE

FORM B

Ages 5-13

TO BE FILLED OUT ABOUT: ______________________________

TO BE FILLED OUT BY: ______________________________
(Adult in family who knows the most about this child's health)

A NOTE ABOUT THIS QUESTIONNAIRE

This Medical History will provide the Health Insurance Study with important information about the past and current health of participants.

The information will in no way affect your insurance. The information is strictly confidential and will not be used or released except in statistical reports (except if required by law) and will not identify you or your family.

If you have any questions, or problems filling out this questionnaire, feel free to call the following person, who will be happy to help you, or will send an interviewer to help you.

LEE TAYLOR — (206) 323-8481

INSTRUCTIONS

READ EACH QUESTION CAREFULLY.

CIRCLE THE NUMBER OF THE ONE ANSWER THAT MOST CLOSELY FITS THIS CHILD.

Example:

1. **HAS THIS CHILD EVER HAD A COLD?**

Yes .... ①
No 2

FOLLOW ANY INSTRUCTIONS NEXT TO THE NUMBER YOU CIRCLED, WHICH TELL YOU TO GO TO ANOTHER QUESTION OR ANOTHER PAGE.

Example:

22. **DOES THIS CHILD WEAR GLASSES?**

Yes .... ① *—Answer 22-A*
No .... 2 *—Go to 23*

22-A. **HOW LONG HAS THIS CHILD BEEN WEARING GLASSES?**

(Circle one)
Less than 1 year .... ①
About 1 year 2
About 2 years 3
More than 2 years 4

IF THERE ARE NO INSTRUCTIONS AFTER YOUR ANSWER, GO TO THE VERY NEXT QUESTION.

BEGIN ON THE NEXT PAGE ⟶

TEETH AND GUMS

DO NOT WRITE IN THIS SPACE

CARD 02

1. **HOW OFTEN DOES THIS CHILD USUALLY BRUSH HIS OR HER TEETH?**

	(Circle one)	
Never	1	13/
Once a week or less	2	
Once every few days	3	
Once a day	4	
More than once a day	5	

---

2. **HOW OFTEN DOES THIS CHILD USE DENTAL FLOSS?**

	(Circle one)	
Never	1	14/
Once a month or less	2	
Once a week or less	3	
Once every few days	4	
At least once a day	5	

---

3. **WHEN WAS THE LAST TIME THIS CHILD WENT TO THE DENTIST?**

	(Circle one)	
Within the past 12 months	1	15/
1 - 2 years ago	2	
More than 2 but less than 5 years ago	3	
5 or more years ago	4	
Never	5	

---

4. **DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISTRESS HAVE THIS CHILD'S TEETH OR GUMS CAUSED HIM OR HER?**

	(Circle one)	
A great deal	1	16/
Some pain or distress	2	
A little pain or distress	3	
No pain or distress at all	4	

---

5. **DURING THE PAST 3 MONTHS, HOW MUCH HAVE THIS CHILD'S TEETH OR GUMS WORRIED OR CONCERNED YOU?**

	(Circle one)	
A great deal	1	17/
Somewhat	2	
A little	3	
Not at all	4	

CARD 02

EYESIGHT

DO NOT WRITE IN THIS SPACE

6. HAS THIS CHILD'S EYESIGHT EVER BEEN TESTED BY A DOCTOR?

(Circle one)

Yes	1	*—Answer 6-A-B-C*	18/
No	2	*—Go to 7, next page*	
Don't know	3		

6-A. WHEN WAS THE LAST TIME THE CHILD'S EYES WERE TESTED BY A DOCTOR?

(Circle one)

Within the past 12 months	1	19/
1 to 2 years ago	2	
More than 2, but less than 5 years ago	3	
5 or more years ago	4	

6-B. WAS THIS TEST NEEDED FOR SCHOOL, CAMP, INSURANCE OR SOME REASON LIKE THAT?

Yes	1	20/
No	2	

6-C. HAS A DOCTOR, OR EYE DOCTOR, EVER PRESCRIBED GLASSES OR CONTACT LENSES FOR THIS CHILD?

Yes	1	21/
No	2	

CARD 02

DO NOT WRITE IN THIS SPACE

7. DOES THIS CHILD CURRENTLY WEAR GLASSES OR CONTACT LENSES TO IMPROVE HIS OR HER EYESIGHT?

(Circle one)

Yes, prescribed by doctor	1	*—Answer 7-A-B-C*	22/
Yes, but not prescribed	2		
No, does not wear glasses	3	*—Go to 8*	

7-A. DOES THE CHILD WEAR THESE ALL THE TIME OR ONLY SOMETIMES?

All the time	1	23/
Only sometimes	2	

7-B. DOES THE CHILD WEAR THEM FOR READING AND CLOSE WORK, OR FOR SEEING THINGS AT A DISTANCE, OR BOTH?

(Circle one)

For reading and close work	1	24/
For seeing at a distance	2	
For both purposes	3	

7-C. WITH GLASSES OR CONTACT LENSES, HOW WELL CAN THE CHILD SEE, AS COMPARED WITH MOST CHILDREN OF THAT AGE?

(Circle one)

Better than most	1	25/
About the same as most	2	
Not as well as most	3	

---

8. WITHOUT GLASSES, CAN THE CHILD SEE WELL ENOUGH TO READ AN ORDINARY CHILDREN'S BOOK?

Yes	1	26/
No	2	

CARD 02

DO NOT WRITE IN THIS SPACE

9. WITHOUT GLASSES, CAN THE CHILD RECOGNIZE A FRIEND ACROSS THE STREET?

Yes	1	27/
No	2	

---

10. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S EYESIGHT WORRIED OR CONCERNED YOU?

(Circle one)

A great deal	1	28/
Somewhat	2	
A little	3	
Not at all	4	

---

11. DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAVE EYESIGHT PROBLEMS KEPT THIS CHILD FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN OF THAT AGE DO?

(Circle one)

All of the time	1	29/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

---

12. DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISTRESS HAVE THE CHILD'S EYES CAUSED HIM OR HER?

(Circle one)

A great deal	1	30/
Some	2	
A little	3	
None at all	4	

CARD 02

HEARING

DO NOT WRITE IN THIS SPACE

13. **DURING THE CHILD'S LIFE, HAS HE OR SHE EVER HAD AN EARACHE?**

(Circle one)

Yes, very often	1	*—Answer 13-A*	31/
Yes, occasionally	2		
Yes, but rarely	3		
Never had an earache	4	*—Go to 14*	

13-A. **HAS THE CHILD HAD AN EARACHE IN THE PAST 30 DAYS?**

Yes	1	32/
No	2	

---

14. **DURING THIS CHILD'S LIFE, HAS HE OR SHE EVER HAD DRAINAGE (OTHER THAN WAX) FROM THE EAR?**

(Circle one)

Yes, very often	1	*—Answer 14-A*	33/
Yes, occasionally	2		
Yes, but rarely	3		
Never had drainage from ear	4	*—Go to 15*	

14-A. **HAS THIS CHILD HAD DRAINAGE FROM THE EAR IN THE PAST 30 DAYS?**

Yes	1	34/
No	2	

---

15. **HAS THIS CHILD EVER HAD AN EAR INJURY? IF YES, WHICH EAR?**

(Circle one)

Yes, injury to right ear	1	35/
Yes, injury to left ear	2	
Yes, injury to both ears	3	
No, never had ear injury	4	

DO NOT WRITE IN THIS SPACE

16. HAS THE CHILD EVER HAD EAR SURGERY? IF YES, WHICH EAR?

	(Circle one)	
Yes, right ear surgery	1	36/
Yes, left ear surgery	2	
Yes, surgery both ears	3	
No, never had ear surgery	4	

---

17. HAS THE CHILD'S HEARING EVER BEEN TESTED?

	(Circle one)	
Yes, by a doctor	1	37/
Yes, by someone else	2	
No	3	
Don't know	4	

---

18. CAN THIS CHILD USUALLY HEAR AND UNDERSTAND WHAT YOU SAY, WITHOUT SEEING YOUR FACE AND WITHOUT A HEARING AID, IF YOU WHISPER TO HIM OR HER ACROSS A QUIET ROOM?

Yes	1	*—Go to 23, page 11*	38/
No	2	*—Answer 18-A*	

18-A. CAN THIS CHILD USUALLY HEAR AND UNDERSTAND WHAT YOU SAY, WITHOUT SEEING YOUR FACE AND WITHOUT A HEARING AID, IF YOU TALK IN A NORMAL VOICE ACROSS A QUIET ROOM?

Yes	1	*—Go to 23, page 11*	39/
No	2	*—Answer 18-B*	

18-B. CAN THE CHILD USUALLY HEAR AND UNDERSTAND WHAT YOU SAY, WITHOUT SEEING YOUR FACE AND WITHOUT A HEARING AID, IF YOU SHOUT TO HIM OR HER ACROSS A QUIET ROOM?

Yes	1	*—Go to 19, next page*	40/
No	2	*—Answer 18-C*	

18-C. CAN THE CHILD USUALLY HEAR AND UNDERSTAND WHAT YOU SAY, WITHOUT A HEARING AID, IF YOU SPEAK LOUDLY INTO THE CHILD'S BETTER EAR?

Yes	1	*—Go to 19, next page*	41/
No	2	*—Answer 18-D next page*	

CARD 02

DO NOT WRITE IN THIS SPACE

18-D. CAN THE CHILD USUALLY TELL THE SOUND OF SPEECH FROM OTHER SOUNDS AND NOISES WITHOUT A HEARING AID?

Yes	1	*—Go to 19,*	42/
No	2	*—Answer 18-E*	

18-E. CAN THE CHILD USUALLY TELL ONE KIND OF NOISE FROM ANOTHER WITHOUT A HEARING AID?

Yes	1	*—Go to 19,*	43/
No	2	*—Answer 18-F*	

18-F. CAN THE CHILD HEAR LOUD NOISES WITHOUT A HEARING AID?

Yes	1	44/
No	2	

---

19. HAS THIS CHILD EVER BEEN UNDER A DOCTOR'S CARE OR SUPERVISION FOR A HEARING PROBLEM?

Yes	1	*—Answer 19-A*	45/
No	2	*—Go to 20, next page*	

19-A. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR ABOUT A HEARING PROBLEM?

(Circle one)

Within the past 3 months	1	46/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

CARD 02

DO NOT WRITE IN THIS SPACE

20. HAS THIS CHILD EVER USED A HEARING AID?

(Circle one)

Yes, prescribed by a doctor .... 1 } —*Answer 20-A-B* 47/
Yes, but not prescribed by doctor .... 2 }
No .... 3 —*Go to 21*

20-A. IN WHICH EAR HAS HE OR SHE USED A HEARING AID?

(Circle one)

Left ear 1 48/
Right ear 2
Both ears 3

20-B. WITH A HEARING AID, HOW WELL CAN THE CHILD HEAR, COMPARED TO MOST CHILDREN OF THAT AGE?

(Circle one)

Better than most 1 49/
About the same as most 2
Not as well as most 3

---

21. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S HEARING PROBLEM WORRIED OR CONCERNED YOU?

(Circle one)

A great deal 1 50/
Somewhat 2
A little 3
Not at all 4

---

22. DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAVE HEARING PROBLEMS KEPT THIS CHILD FROM DOING THE KINDS OF THINGS OTHER CHILDREN THAT AGE DO?

(Circle one)

All of the time 1 51/
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

CARD 02

EAR INFECTIONS

DO NOT WRITE IN THIS SPACE

23. DURING THE PAST 12 MONTHS, HAS A DOCTOR EVER SAID THAT THIS CHILD HAD A MIDDLE EAR INFECTION? ("Otitis media," pronounced oh-TIE-tiss MEE-dee-a)

Yes	1	*—Answer 24*	52/
No	2	*—Go to 31, next page*	

24. ABOUT HOW MANY TIMES IN THE PAST 12 MONTHS HAS A DOCTOR SAID THIS CHILD HAD AN EAR INFECTION? (Write in number)

________ times in last 12 months 53-54/

25. WHEN THE CHILD HAS HAD AN EAR INFECTION, ABOUT HOW MANY DAYS DO YOU FEEL IT USUALLY LASTED, ON THE AVERAGE? (Write in number)

________ days 55-56/

26. WHEN THE CHILD HAS HAD AN EAR INFECTION, ABOUT HOW MANY DAYS HAS IT KEPT THE CHILD IN BED FOR ALL OR MOST OF THE DAY? (Write in number. If no days in bed, write "0")

________ days in bed 57-58/

27. HAS THIS CHILD EVER BEEN TREATED WITH TUBES IN HIS OR HER EARS?

Yes	1	*—Answer 27-A*	59/
No	2	*—Go to 28*	

27-A. DOES THE CHILD CURRENTLY HAVE TUBES IN HIS OR HER EARS?

Yes	1	60/
No	2	

28. DURING THE PAST 12 MONTHS, HOW MUCH PAIN OR DISTRESS HAVE THIS CHILD'S EAR INFECTIONS CAUSED HIM OR HER? (Circle one)

A great deal	1	61/
Some	2	
A little	3	
None at all	4	

CARD 02

DO NOT WRITE IN THIS SPACE

29. DURING THE PAST 12 MONTHS, HOW MUCH HAVE THIS CHILD'S EAR INFECTIONS WORRIED OR CONCERNED YOU?

(Circle one)

A great deal	1	62/
Somewhat	2	
A little	3	
Not at all	4	

---

30. DURING THE PAST 12 MONTHS, WHEN THE CHILD HAS HAD AN EAR INFECTION, HOW MUCH OF THE TIME HAS IT KEPT THE CHILD FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN THAT AGE DO?

(Circle one)

All of the time	1	63/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

ASTHMA

31. HAS A DOCTOR EVER SAID THAT THIS CHILD HAS ASTHMA?

Yes	1	*—Answer 32*	64/
No	2	*—Go to 42, page 15*	

---

32. HOW MANY ATTACKS OF ASTHMA HAS THIS CHILD HAD IN THE PAST 12 MONTHS? (Write in number. If none, write "0")

________ asthma attacks in past 12 months 65-66/

---

33. DOES THIS CHILD USUALLY HAVE MORE ATTACKS OF ASTHMA IN THE SPRING MONTHS, IN THE FALL MONTHS, OR IN THE WINTER MONTHS?

(Circle one)

Spring months	1	67/
Fall months	2	
Winter months	3	
Both spring and fall	4	
About the same in all seasons	5	

CARD 02

DO NOT WRITE IN THIS SPACE

CARD 03

34. **DURING THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY OF THESE TREATMENTS FOR THIS CHILD'S ASTHMA? (Circle one number on each line)**

	Yes	No	
A. Any medicines	1	2	13/
B. Changes in the child's environment — such as avoiding certain foods, plants, or animals, or making the house more dust-free	1	2	14/
C. Any allergy shots	1	2	15/

---

35. **DOES THIS CHILD CURRENTLY DO ANY OF THE FOLLOWING THINGS FOR HIS OR HER ASTHMA? (Circle one number on each line)**

	Yes	No	
A. Take any medicines for asthma	1	2	16/
B. Avoid certain foods, plants, or animals, or have the house more dust-free	1	2	17/
C. Get any allergy shots	1	2	18/

---

36. **WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR ABOUT ASTHMA?**

	(Circle one)	
Within the past 3 months	1	19/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

---

37. **HAS A DOCTOR TOLD YOU THAT THIS CHILD HAS NOW OUTGROWN ASTHMA (NO LONGER HAS IT)?**

Yes	1	20/
No	2	

---

38. **DURING THE PAST 12 MONTHS, HOW MUCH PAIN OR DISTRESS HAS ASTHMA CAUSED THIS CHILD?**

	(Circle one)	
A great deal	1	21/
Some	2	
A little	3	
None at all	4	

DO NOT WRITE IN THIS SPACE

39. **DURING THE PAST 12 MONTHS, HOW MUCH HAS THIS CHILD'S ASTHMA WORRIED OR CONCERNED YOU?**

(Circle one)

A great deal	1	22/
Somewhat	2	
A little	3	
Not at all	4	

---

40. **DURING THE PAST 12 MONTHS, HOW MUCH OF THE TIME HAS ASTHMA KEPT THIS CHILD FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN THAT AGE DO?**

(Circle one)

All of the time	1	23/
Most of the time	2	
A little of the time	3	
None of the time	4	

---

41. **DURING THE PAST 12 MONTHS, HOW MANY DAYS HAS ASTHMA KEPT THIS CHILD IN BED FOR ALL OR MOST OF THE DAY? (Write in number. If none, write "0")**

________ days in bed in past 12 months 24-25/

CARD 03

HAY FEVER AND OTHER PLANT ALLERGIES

DO NOT WRITE IN THIS SPACE

42. HAS THIS CHILD EVER HAD HAY FEVER OR OTHER ALLERGIES TO PLANTS AND GRASSES?

Yes	1	— *Answer 43*	26/
No	2	— *Go to 50, page 17*	

---

43. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR ABOUT HAY FEVER OR OTHER PLANT ALLERGIES?

(Circle one)

Within the past 3 months	1	27/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	
Never saw a doctor about this	5	

---

44. IN THE PAST 12 MONTHS, DID THE CHILD GET ANY SHOTS TO HELP PREVENT HAY FEVER OR OTHER PLANT ALLERGIES?

Yes	1	28/
No	2	

---

45. IN THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY MEDICINE TO HELP PREVENT THE SYMPTOMS OF HAY FEVER OR OTHER PLANT ALLERGIES?

Yes	1	29/
No	2	

---

46. DOES THE CHILD ACTUALLY TAKE ANY MEDICINE FOR THE HAY FEVER OR OTHER PLANT ALLERGIES?

(Circle one)

Yes, prescribed by doctor	1	30/
Yes, but not prescribed	2	
No, doesn't take any	3	

CARD 03

DO NOT WRITE IN THIS SPACE

47. **DURING THE PAST 12 MONTHS, HOW MUCH PAIN OR DISTRESS HAS THE HAY FEVER OR OTHER PLANT ALLERGIES CAUSED THIS CHILD?**

	(Circle one)	
A great deal	1	31/
Some	2	
A little	3	
None at all	4	

---

48. **DURING THE PAST 12 MONTHS, HOW MUCH HAS THIS CHILD'S HAY FEVER OR OTHER PLANT ALLERGIES WORRIED OR CONCERNED YOU?**

	(Circle one)	
A great deal	1	32/
Somewhat	2	
A little	3	
Not at all	4	

---

49. **DURING THE PAST 12 MONTHS, IN HOW MANY WEEKS OR MONTHS WAS THE CHILD BOTHERED BY HAY FEVER OR OTHER PLANT ALLERGIES?**

	(Circle one)		
Not bothered at all in last 12 months	1	*—Go to 50, next page*	33/
Less than 2 weeks of the time	2	*—Answer 49-A-B*	
2 weeks but less than 1 month	3		
1 month but less than 2 months	4		
2 months but less than 4 months	5		
4 months but less than 6 months	6		
6 months or more	7		

49-A. **DURING THE WEEKS WHEN THE CHILD WAS BOTHERED BY HAY FEVER OR OTHER PLANT ALLERGIES, HOW MUCH OF THE TIME DID IT KEEP HIM OR HER FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN THAT AGE DO?**

	(Circle one)	
All of the time	1	34/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

49-B. **DURING THE PAST 12 MONTHS, HOW MANY DAYS HAS HAY FEVER OR OTHER PLANT ALLERGIES KEPT THE CHILD IN BED FOR ALL OR MOST OF THE DAY? (Write in number. If none, write "0")**

_________ days in bed in past 12 months 35-36/

CARD 03

ECZEMA, ALLERGIC SKIN RASH

DO NOT WRITE IN THIS SPACE

50. IN THE PAST 12 MONTHS, HAS THIS CHILD HAD A RASH THAT LASTED AT LEAST 3 MONTHS?

Yes	1	*—Answer 51*	37/
No	2	*—Go to 62, page 19*	

---

51. HAS A DOCTOR EVER SAID THAT THIS CHILD HAS ECZEMA (ECK-ze-ma)?

Yes	1	38/
No	2	

---

52. HAS THIS RASH OR ECZEMA INVOLVED THE FACE, NECK, ELBOWS, HANDS OR KNEES?

(Circle one)

Yes, three of more of these five areas	1	39/
Yes, two of these areas	2	
Yes, one of these areas	3	
No, none of these areas	4	

---

53. DOES THIS CHILD CURRENTLY HAVE THIS RASH OR ECZEMA?

Yes	1	40/
No	2	

---

54. HAVE YOU OR THE CHILD EVER SEEN A DOCTOR ABOUT THIS RASH OR ECZEMA?

Yes	1	*—Answer 55*	41/
No	2	*—Go to 58, next page*	

---

55. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR FOR SKIN RASH OR ECZEMA?

(Circle one)

Within the past 3 months	1	42/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

CARD 03

DO NOT WRITE IN THIS SPACE

56. DID A DOCTOR EVER PRESCRIBE ANY OF THE FOLLOWING FOR THIS CHILD'S SKIN RASH OR ECZEMA? (Circle one number on each line)

	Yes	No	
A. Pills or liquids to take by mouth	1	2	43/
B. Creams or ointments to put on the skin	1	2	44/
C. Special soaps or bath oils	1	2	45/

57. DID A DOCTOR EVER ADVISE YOU TO DO ANY OF THE FOLLOWING THINGS FOR THIS CHILD TO AVOID ECZEMA OR TO CURE THE RASH? (Circle one number on each line)

	Yes	No	
A. Avoid certain foods	1	2	46/
B. Avoid certain types of clothing or fabric	1	2	47/
C. Avoid daily baths	1	2	48/
D. Avoid something else (pets, for example)	1	2	49/

58. DOES THIS CHILD CURRENTLY USE ANY OF THE FOLLOWING, WHETHER OR NOT A DOCTOR HAS PRESCRIBED THEM? (Circle one number on each line)

	Yes	No	
A. Pills or liquids to take by mouth	1	2	50/
B. Creams or ointments to put on the skin	1	2	51/
C. Special soaps or bath oils	1	2	52/

59. DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISCOMFORT HAS ECZEMA OR SKIN RASH CAUSED THIS CHILD?

	(Circle one)	
A great deal	1	53/
Some	2	
A little	3	
None at all	4	

60. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S ECZEMA OR SKIN RASH WORRIED YOU?

	(Circle one)	
A great deal	1	54/
Somewhat	2	
A little	3	
None at all	4	

CARD 03

DO NOT WRITE IN THIS SPACE

61. DURING THE PAST 3 MONTHS, HOW OFTEN HAS ECZEMA OR A SKIN RASH KEPT THIS CHILD FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN THAT AGE DO?

(Circle one)

All of the time 1 55/
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

ANEMIA

62. DURING THE PAST 12 MONTHS, HAS A DOCTOR TOLD YOU THAT THIS CHILD HAS ANEMIA (a-NEE-mee-a, SOMETIMES CALLED LOW BLOOD) OR IS HE OR SHE CURRENTLY UNDER TREATMENT FOR IT?

(Circle one)

No, child does not have it .... 1 —*Go to 69, page 21* 56/
Yes, child has it or is under treatment for it ..... 2 } —*Answer 63*
Yes, child had it, but is now cured .... 3 }

---

63. DURING THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY OF THESE TREATMENTS FOR THIS CHILD'S ANEMIA? (Circle one number on each line)

	Yes	No	
A. Special diet	1	2	57/
B. Iron pills or shots	1	2	58/
C. Vitamin pills or shots	1	2	59/
D. Blood transfusions	1	2	60/

---

64. DOES THIS CHILD CURRENTLY TAKE ANY OF THE FOLLOWING TREATMENTS, WHETHER OR NOT A DOCTOR PRESCRIBED THEM? (Circle one number on each line)

	Yes	No	
A. Special diet	1	2	61/
B. Iron pills or shots	1	2	62/
C. Vitamin pills or shots	1	2	63/
D. Blood transfusions	1	2	64/

CARD 03

DO NOT
WRITE IN
THIS SPACE

65. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR ABOUT ANEMIA?

(Circle one)

Within the past 3 months	1	65/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

---

66. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S ANEMIA WORRIED OR CONCERNED YOU?

(Circle one)

A great deal	1	66/
Somewhat	2	
A little	3	
Not at all	4	

---

67. DURING THE PAST 3 MONTHS, HOW OFTEN HAS ANEMIA KEPT THIS CHILD FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN THAT AGE DO?

(Circle one)

All of the time	1	67/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

---

68. DURING THE PAST 30 DAYS, HOW MANY DAYS HAS ANEMIA KEPT THIS CHILD IN BED ALL OR MOST OF THE DAY? (Write in number. If none, write "0")

________ days in bed last month 68-69/

CARD 03

LEAD POISONING

DO NOT WRITE IN THIS SPACE

69. HAS A DOCTOR EVER SAID THAT THIS CHILD HAD LEAD POISONING?

Yes	1	*—Answer 70*	70/
No	2	*—Go to 76, next page*	

---

70. DURING THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY MEDICINES FOR THE LEAD POISONING?

Yes	1	71/
No	2	

---

71. DOES THIS CHILD CURRENTLY TAKE ANY MEDICINES FOR LEAD POISONING?

Yes	1	72/
No	2	

---

72. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR ABOUT LEAD POISONING?

(Circle one)

Within the past 3 months	1	73/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

---

73. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S LEAD POISONING WORRIED OR CONCERNED YOU?

(Circle one)

A great deal	1	74/
Somewhat	2	
A little	3	
Not at all	4	

CARD 03

DO NOT WRITE IN THIS SPACE

74. **DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S LEAD POISONING KEPT THIS CHILD FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN THAT AGE DO?**

(Circle one)

All of the time	1	75/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

---

75. **DURING THE PAST 30 DAYS, HOW MANY DAYS HAS LEAD POISONING KEPT THIS CHILD IN BED ALL OR MOST OF THE DAY? Write in number. If none, write "0")**

_________ days in bed last month 76-77/

CARD 04

KIDNEY, BLADDER, URINE INFECTION

76. **HAS A DOCTOR EVER SAID THAT THIS CHILD HAD A KIDNEY, BLADDER OR URINE INFECTION?**

Yes	1	*—Answer 76-A*	13/
No	2	*—Go to 85, page 24*	

76-A. **HOW MANY TIMES ALTOGETHER?**

(Circle one

Once	1	14/
Twice	2	
3 times	3	
4 times	4	
5 or more times	5	

---

77. **DOES THIS CHILD CURRENTLY HAVE A KIDNEY, BLADDER OR URINE INFECTION? (FOR EXAMPLE: CYSTITIS (sis-TIE-tis), PYELONEPHRITIS (pie-lo-neh-FRY-tiss), ETC.)**

Yes	1	15/
No	2	

---

78. **IN THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY PILLS OR MEDICINES FOR THIS KIND OF INFECTION?**

Yes	1	16/
No	2	

CARD 03/04

DO NOT WRITE IN THIS SPACE

79. DOES THIS CHILD CURRENTLY TAKE ANY PILLS OR MEDICINES FOR THE INFECTION, WHETHER OR NOT A DOCTOR PRESCRIBED THEM?

(Circle one)

Yes, prescribed by doctor	1	17/
Yes, but not prescribed	2	
No, is not taking anything	3	

---

80. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR ABOUT A KIDNEY, BLADDER OR URINE INFECTION?

(Circle one)

Within the past 3 months	1	18/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

---

81. DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISTRESS HAS THIS CHILD'S KIDNEY, BLADDER OR URINE INFECTION CAUSED HIM OR HER?

(Circle one)

A great deal	1	19/
Some	2	
A little	3	
None	4	

---

82. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S KIDNEY, BLADDER OR URINE INFECTION WORRIED OR CONCERNED YOU?

(Circle one)

A great deal	1	20/
Somewhat	2	
A little	3	
Not at all	4	

---

83. DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAS A KIDNEY, BLADDER OR URINE INFECTION KEPT THIS CHILD FROM DOING THE KINDS OF THINGS THAT OTHER CHILDREN THAT AGE DO?

(Circle one)

All of the time	1	21/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

DO NOT WRITE IN THIS SPACE

84. DURING THE PAST 30 DAYS, HOW MANY DAYS HAS A KIDNEY, BLADDER OR URINE INFECTION KEPT THIS CHILD IN BED ALL OR MOST OF THE DAY? (Write in number. If none, write "0")

________ days in bed last month 22-23/

BEDWETTING

85. HAS THIS CHILD WET THE BED DURING THE PAST 3 MONTHS?

Yes	1	*—Answer 86*	24/
No	2	*—Go to 94, page 26*	

---

86. HOW OFTEN DOES THIS CHILD USUALLY WET THE BED?

	(Circle one)	
Less than once a week	1	25/
About once a week	2	
2 - 3 times a week	3	
4 - 5 times a week	4	
Almost every night	5	

---

87. HAS THIS CHILD EVER STAYED DRY AT NIGHT FOR AS LONG AS 3 MONTHS?

Yes	1	26/
No	2	

---

88. HAVE YOU OR THE CHILD EVER SEEN A DOCTOR ABOUT THIS BEDWETTING?

Yes	1	*—Answer 89*	27/
No	2	*—Go to 92 next page*	

---

89. WHEN WAS THE LAST TIME YOU OR THE CHILD SAW A DOCTOR ABOUT THIS CHILD'S BEDWETTING?

	(Circle one)	
Within the past 3 months	1	28/
3 - 6 months ago	2	
7 - 12 months ago	3	
More than 1 year ago	4	

CARD 04

DO NOT WRITE IN THIS SPACE

90. HAS A DOCTOR EVER DONE ANY TEST ON THIS CHILD'S URINE, BECAUSE OF THE BEDWETTING?

Yes 1 29/
No 2

---

91. HAS A DOCTOR EVER PRESCRIBED ANY OF THESE TREATMENTS FOR THIS CHILD'S BEDWETTING? (Circle one number on each line)

	Yes	No	
A. Medicines like Tofranil? (TOFF-ran-ill)	1	2	30/
B. Psychological therapy or counseling?	1	2	31/
C. Frequent discussions or visits with the doctor?	1	2	32/
D. Anything else?	1	2	33/

What? ______________________________

---

92. DURING THE PAST 3 MONTHS, HOW MUCH HAS THIS CHILD'S BEDWETTING WORRIED OR CONCERNED YOU?

(Circle one)

A great deal 1 34/
Somewhat 2
A little 3
Not at all 4

---

93. DURING THE PAST 3 MONTHS, HOW MUCH DISCOMFORT OR DISTRESS HAS THE BEDWETTING CAUSED THIS CHILD?

(Circle one)

A great deal 1 35/
Some 2
A little 3
None at all 4

CARD 04

DO NOT WRITE IN THIS SPACE

CANCER

94. HAS A DOCTOR EVER TOLD YOU THAT THIS CHILD HAD CANCER?

Yes	1	*—Answer 95*	36/
No	2	*—Go to 104, page 29*	

---

95. WHERE IS, OR WAS, THE CANCER LOCATED?

(Circle one)

Eye	01	37-38/
Connective tissue (sarcoma)	02	
Brain and central nervous system	03	
Bone	04	
Adrenal gland (neuroblastoma)	05	
Kidney (Wilms) or urinary tract	06	
Blood (leukemia)	07	
Lymph glands or nodes (lymphoma)	08	
Lung	09	
Liver	10	
Mixed tissues (teratoma)	11	
Somewhere else	12	

Where? ________________________________

---

96. WHEN WAS THE CANCER FIRST DIAGNOSED? (WHEN WERE YOU FIRST TOLD ABOUT IT?)

(Circle one)

Within the past 6 months	1	39/
6 months to 5 years ago	2	
6 to 10 years ago	3	
More than 10 years ago	4	

CARD 04

DO NOT WRITE IN THIS SPACE

97. WHEN WAS THE LAST TIME THE CHILD HAD ANY PAIN OR DISCOMFORT FROM CANCER?

(Circle one)

Within the past 6 months	1	*—Answer 97-A*	40/
6 months to 1 year ago	2	*—Go to 98*	
More than 1 year, to 5 years ago	3		
More than 5 years ago	4		
Never had pain or discomfort	5		

97-A. DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISCOMFORT HAS THE CANCER CAUSED THE CHILD?

(Circle one)

A great deal	1	41/
Some	2	
A little	3	
None at all	4	

---

98. DURING THE PAST 3 MONTHS, HOW MUCH HAS THE CANCER WORRIED OR CONCERNED YOU?

(Circle one)

A great deal	1	42/
Somewhat	2	
A little	3	
Not at all	4	

---

99. DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAS THE CANCER KEPT THE CHILD FROM DOING THE KINDS OF THINGS OTHER CHILDREN THAT AGE DO?

(Circle one)

All of the time	1	43/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

---

100. DURING THE PAST 30 DAYS, HOW MANY DAYS HAS THE CANCER KEPT THE CHILD IN BED ALL DAY OR MOST OF THE DAY? (If none, write in "0")

________ days in bed last month 44-45/

CARD 04

DO NOT WRITE IN THIS SPACE

101. HOW RECENTLY HAS THE CHILD HAD AN OPERATION TO REMOVE THE CANCER?

	(Circle one)	
Less than 6 months ago	1	46/
6 months to 1 year ago	2	
More than 1 year to 5 years ago	3	
More than 5 years ago	4	
Never had an operation	5	

---

102. HOW RECENTLY HAS HE OR SHE HAD ANY RADIATION TO STOP THE CANCER?

	(Circle one)	
Less than 6 months ago	1	47/
6 months to 1 year ago	2	
More than 1 year to 5 years ago	3	
More than 5 years ago	4	
Never had radiation	5	

---

103. HOW RECENTLY HAS HE OR SHE TAKEN ANY MEDICINE (PILLS, LIQUIDS, OR SHOTS) TO STOP THE CANCER?

	(Circle one)	
Less than 6 months ago	1	48/
6 months to 1 year ago	2	
More than 1 year to 5 years ago	3	
More than 5 years ago	4	
Never took medicine	5	

CARD 04

FEVER CONVULSIONS, EPILEPSY, CONVULSIONS

DO NOT WRITE IN THIS SPACE

104. HAS THIS CHILD EVER HAD A FEVER CONVULSION (con-VUL-shun), THAT IS, A FIT OR SEIZURE WITH A HIGH FEVER?

Yes	1	*—Answer 104-A*	49/
No	2	*—Go to 105*	

104-A. HAS THIS CHILD EVER HAD A CONVULSION, FIT, OR SEIZURE WITHOUT A HIGH FEVER?

Yes	1	*—Answer 104-B*	50/
No	2	*—Go to 106 below*	

104-B. HAS A DOCTOR EVER SAID THAT THIS CHILD HAS EPILEPSY (EPP-i-lep-see)?

Yes	1	*—Go to 106 below*	51/
No.	2		

---

105. HAS THIS CHILD EVER HAD A CONVULSION, FIT, OR SEIZURE WITHOUT A HIGH FEVER?

Yes	1	*—Answer 105-A*	52/
No	2	*—Go to 115, page 31*	

105-A. HAS A DOCTOR EVER SAID THAT THIS CHILD HAS EPILEPSY (EPP-i-lep-see)?

Yes	1	*—Go to 106*	53/
No	2		

---

106. WHEN WAS THE LAST TIME THIS CHILD HAD A FEVER CONVULSION, FIT, SEIZURE, OR ATTACK OF EPILEPSY?

(Circle one)

Within the past 12 months	1	54/
1 - 2 years ago	2	
3 or more years ago	3	

DO NOT WRITE IN THIS SPACE

107. DURING THE PAST 12 MONTHS, HAS A DOCTOR PRESCRIBED ANY MEDICINES FOR THE FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS?

Yes	1	55/
No	2	

---

108. DOES THIS CHILD CURRENTLY TAKE ANY MEDICINES FOR FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS, WHETHER OR NOT A DOCTOR PRESCRIBED THEM?

Yes	1	56/
No	2	

---

109. WHEN WAS THE LAST TIME THIS CHILD SAW A DOCTOR FOR FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS?

(Circle one)

Within the past 3 months	1	57/
3 to 6 months ago	2	
7 to 12 months ago	3	
More than 1 year ago	4	

---

110. DURING THE PAST 3 MONTHS, HOW MUCH PAIN OR DISTRESS HAVE FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS CAUSED THIS CHILD?

(Circle one)

A great deal	1	58/
Some	2	
A little	3	
None	4	

---

111. DURING THE PAST 3 MONTHS, HOW MUCH HAVE THIS CHILD'S FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS WORRIED OR CONCERNED YOU?

(Circle one)

A great deal	1	59/
Somewhat	2	
A little	3	
Not at all	4	

---

112. DURING THE PAST 3 MONTHS, HOW MANY ATTACKS OF FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS HAS THIS CHILD HAD? (Write in number. If none, write in "0")

________ attacks in past 3 months 60-61/

CARD 04

DO NOT WRITE IN THIS SPACE

113. DURING THE PAST 3 MONTHS, HOW MUCH OF THE TIME HAVE FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS KEPT THIS CHILD FROM DOING THE KINDS OF THINGS OTHER CHIDREN THAT AGE DO?

	(Circle one)	
All of the time	1	62/
Most of the time	2	
Some of the time	3	
A little of the time	4	
None of the time	5	

---

114. DURING THE PAST 30 DAYS, HOW MANY DAYS HAVE FEVER CONVULSIONS, EPILEPSY, OR CONVULSIONS KEPT THIS CHILD IN BED ALL OR MOST OF THE DAY? (If none, write in "0")

________ days in bed last month 63-64/

TONSILS, ADENOIDS

115. HAS THIS CHILD EVER HAD TONSILS OR ADENOIDS REMOVED?

	(Circle one)	
Yes, tonsils only	1	65/
Yes, adenoids only	2	
Yes, both tonsils and adenoids	3	
No	4	

DRUG ALLERGY

116. IS THIS CHILD ALLERGIC TO PENICILLIN? (Pen-ih-SIL-in)

	(Circle one)	
Yes	1	66/
No	2	
Don't know	3	

---

117. IS HE OR SHE ALLERGIC TO AMPICILLIN? (Am-pih-SIL-in)

	(Circle one)	
Yes	1	67/
No	2	
Don't know	3	

CARD 04

MISSING LIMBS

DO NOT WRITE IN THIS SPACE

118. DOES THIS CHILD HAVE ANY MISSING LIMBS — THAT IS, ARMS, LEGS, OR FINGERS THAT ARE MISSING OR HAVE BEEN AMPUTATED?

Yes	1	*—Answer 119*	68/
No	2	*—Go to 121, page 34*	

---

119. IS AN UPPER LIMB MISSING?

Yes	1	*—Answer 119-A-B*	69/
No	2	*—Go to 120, next page*	

119-A. PLEASE CIRCLE ONE NUMBER TO INDICATE ANY MISSING PART ON THE RIGHT SIDE. IF NOT ON RIGHT SIDE, CIRCLE "5"; THEN ANSWER 119-B.

Right arm above elbow	1	70/
Right arm below elbow	2	
Right arm at the wrist	3	
1 or more fingers on right hand	4	
Not on right side	5	

119-B. PLEASE CIRCLE ONE NUMBER TO INDICATE ANY MISSING PART ON THE LEFT SIDE. IF NOT ON LEFT SIDE, CIRCLE "5."

Left arm above elbow	1	71/
Left arm below elbow	2	
Left arm at the wrist	3	
1 or more fingers on left hand	4	
Not on left side	5	

120. IS A LOWER LIMB MISSING?

DO NOT WRITE IN THIS SPACE

Yes	1	*—Answer 120-A-B*	72/
No	2	*—Go to 121, next page*	

120-A. PLEASE CIRCLE ONE NUMBER TO INDICATE ANY MISSING PART ON THE RIGHT SIDE. IF NOT ON RIGHT SIDE, CIRCLE "4."

Right leg above knee	1	73/
Right leg below knee	2	
Right leg at ankle	3	
Not on right side	4	

120-B. PLEASE CIRCLE ONE NUMBER TO INDICATE ANY MISSING PART ON THE LEFT SIDE. IF NOT ON LEFT SIDE, CIRCLE "4."

Left leg above knee	1	74/
Left leg below knee	2	
Left leg at ankle	3	
Not on left side	4	

CARD 04

DO NOT WRITE IN THIS SPACE

CARD 05

OTHER ILLNESSES

121. AS FAR AS YOU KNOW, DURING THE PAST 12 MONTHS, HAS THIS CHILD HAD ANY OF THE FOLLOWING CONDITIONS?

IF YES, DID YOU OR THE CHILD SEE A DOCTOR ABOUT IT DURING THE PAST 12 MONTHS?

PLEASE CIRCLE ONE NUMBER ON EACH LINE:

1 — Child has not had the condition at all in the past 12 months
2 — Child has had it, but has not seen a doctor about it in the past 12 months
3 — Child has had it, and has seen a doctor about it in the past 12 months

DURING THE PAST 12 MONTHS, HAS CHILD HAD . . .	No, did not have this	Had it, but did not see doctor	Had it, and saw doctor	
A. Arthritis	1	2	3	13/
B. Chronic sinusitis (sinus trouble)	1	2	3	14/
C. Heart trouble or congenital heart disease	1	2	3	15/
D. Mental illness	1	2	3	16/
E. Cerebral palsy	1	2	3	17/
F. Frequent headaches	1	2	3	18/
G. Mental retardation	1	2	3	19/
H. Hernia	1	2	3	20/
I. Boys only: Undescended testicle	1	2	3	21/

CARD 05

MEDICAL APPLIANCES

DO NOT WRITE IN THIS SPACE

122. DOES THIS CHILD OWN EYEGLASSES OR CONTACT LENSES WHICH CORRECT HIS OR HER VISION?

Yes	1	*—Answer 122-A-B*	22/
No	2	*—Go to 123, next page*	

122-A. WHEN WAS THE LAST TIME THE CHILD GOT A NEW PAIR OF EYEGLASSES OR CONTACT LENSES?

(Circle one)

Less than 6 months ago	1	23/
6 to 11 months ago	2	
1 year ago, but less than 2 years	3	
2 years ago, but less than 3 years	4	
3 years ago, but less than 5 years	5	
5 or more years ago	6	

122-B. DID HE OR SHE OWN EYEGLASSES OR CONTACT LENSES BEFORE THAT TIME?

Yes	1	*—Answer 122-C*	24/
No	2	*—Go to 123, next page*	

122-C. WHEN WAS THE LAST TIME THE CHILD GOT A NEW PAIR OF EYEGLASSES BEFORE THAT TIME? — JUST YOUR BEST GUESS.

(Circle one)

Less than 6 months before that	1	25/
6 - 11 months before than	2	
1 year before that, but less than 2 years	3	
2 years before that, but less than 3 years	4	
3 years before that, but less than 5 years	5	
5 or more years before that	6	

CARD 05

DO NOT WRITE IN THIS SPACE

123. DOES THIS CHILD OWN A HEARING AID?

Yes	1	*—Answer 123-A-B*	26/
No	2	*—Go to 124, next page*	

123-A. WHEN WAS THE LAST TIME THE CHILD GOT A NEW HEARING AID?

	(Circle one)	
Less than 6 months ago	1	27/
6 to 11 months ago	2	
1 year ago, but less than 2 years	3	
2 years ago, but less than 3 years	4	
3 years ago, but less than 5 years	5	
5 or more years ago	6	

123-B. DID HE OR SHE OWN A HEARING AID BEFORE THAT TIME?

Yes	1	*—Answer 123-C*	28/
No	2	*—Go to 124, next page*	

123-C. WHEN WAS THE LAST TIME THE CHILD GOT A NEW HEARING AID BEFORE THAT TIME? — JUST YOUR BEST GUESS

	(Circle one)	
Less than 6 months before that	1	29/
6 to 11 months before that	2	
1 year before that, but less than 2 years	3	
2 years before that, but less than 3 years	4	
3 years before that, but less than 5 years	5	
5 or more years before that	6	

CARD 05

DO NOT WRITE IN THIS SPACE

124. DOES THIS CHILD WEAR DENTURES OR BRACES FOR THE TEETH?

Yes .... 1 —*Answer 124-A-B* 30/
No .... 2 —*Go to 125, next page*

124-A. WHEN WAS THE LAST TIME THE CHILD GOT NEW DENTURES OR BRACES FOR THE TEETH?

(Circle one)

Less than 6 months ago 1 31/
6 to 11 months ago 2
1 year ago, but less than 2 years 3
2 years ago, but less than 3 years 4
3 years ago, but less than 5 years 5
5 or more years ago 6

124-B. DID HE OR SHE WEAR DENTURES OR BRACES BEFORE THAT TIME?

Yes .... 1 —*Answer 124-C* 32/
No .... 2 —*Go to 125, next page*

124-C. WHEN WAS THE LAST TIME THE CHILD GOT NEW DENTURES OR BRACES BEFORE THAT TIME? — JUST YOUR BEST GUESS

(Circle one)

Less than 6 months before that 1 33/
6 to 11 months before 2
1 year before that, but less than 2 years 3
2 years before that, but less than 3 years 4
3 years before that, but less than 5 years 5
5 or more years 6

CARD 05

FUTURE HEALTH EXPENSES

DO NOT WRITE IN THIS SPACE

125. OF COURSE, NOBODY KNOWS WHAT WILL HAPPEN, BUT WE WOULD JUST LIKE YOUR BEST GUESS ON HOW MUCH THIS CHILD'S OWN PERSONAL HEALTH CARE WILL COST DURING THE NEXT 12 MONTHS. (DO NOT COUNT OTHER CHILDREN OR OTHER-MEMBERS OF THE FAMILY.)

INCLUDE DOCTORS, DENTIST, CLINICS, MEDICAL TESTS OR X-RAYS, PRESCRIPTION DRUGS — THE TOTAL OF ALL EXPENSES FOR THIS CHILD'S PERSONAL HEALTH DURING THE NEXT 12 MONTHS.

INCLUDE BOTH WHAT YOU ARE LIKELY TO PAY, AND ALSO WHAT WILL BE PAID BY INSURANCE, MEDICARE, MEDICAID, OR OTHERS.

	(Circle one)	
$100 or less	01	34-35/
$101 - $ 200	02	
$201 - $ 300	03	
$301 - $ 400	04	
$401 - $ 500	05	
$501 - $ 600	06	
$601 - $ 700	07	
$701 - $ 800	08	
$801 - $ 900	09	
$901 - $1,000	10	
More than $1,000	11	

CARD 05

DO NOT WRITE IN THIS SPACE

THANK YOU.

THESE ARE ALL THE QUESTIONS WE HAVE ABOUT THIS CHILD NOW.

PLEASE FILL OUT THE 2 OR 3 ITEMS BELOW, THEN PUT THE QUESTIONNAIRE IN THE MAILING ENVELOPE WITH YOUR OWN.

---

126. PLEASE WRITE IN THE DATE THIS QUESTIONNAIRE WAS COMPLETED:

---

127. IF YOU HAVE ANY COMMENTS YOU WOULD LIKE TO MAKE ABOUT THIS CHILD'S HEALTH OR ABOUT THIS QUESTIONNAIRE, PLEASE WRITE THEM IN BELOW.

---

128. DID THE PERSON WHO WAS ASKED TO FILL OUT THE QUESTIONNAIRE DO IT, OR DID SOMEONE ELSE FILL IT OUT?

Person who was asked	1	*—Go to 127*	36/
Someone else filled it out	2	*—Answer 128-A-B*	

128-A. WHAT IS THE MAIN REASON THE PERSON WHO WAS ASKED DID NOT FILL IT OUT?

(Circle one)

Can't read well enough	1	37/
Has poor eyesight	2	
Has trouble writing	3	
Trouble understanding English	4	
Form is too complicated	5	
Is away from home	6	
Some other reason	7	

What? ______

128-B. PLEASE WRITE IN NAME OF PERSON WHO FILLED IT OUT:

______

CARD 05

MEDICAL HISTORY QUESTIONNAIRE (SEATTLE)

FORM B **Ages 5-13**

SDP: ▨ 01-10/

CARD 01 11-12/

HH: ☒ 13-20/

FAMILY UNIT #: ☐ 21/

# ☐ of ☐ 22-23/

FU: ☒ 24-31/

HIEI: 1 1 9 32-34/

FILLED OUT ABOUT: ☒ 35-42/

FILLED OUT BY: ☒ 43-50/

☐☐☐☐☐☐☐☐ 51-58/
Month Day Year

KEYPUNCH VERIFICATION ☐ 59/

REC. Yes . . . . . 1 No 2 60/
REC. COMP. Yes . . . . . 1 No 2 61/

Appendix E

BEHAVIOR PROBLEMS BATTERY

DO NOT
WRITE IN
THIS SPACE

CARD 04

BEHAVIOR PROBLEMS

56. BELOW IS A LIST OF ITEMS THAT DESCRIBE CHILDREN'S BEHAVIOR OR PROBLEMS THEY SOMETIMES HAVE. PLEASE READ EACH ITEM AND THEN CIRCLE ONE OF THE NUMBERS ON EACH LINE TO INDICATE HOW OFTEN IT DESCRIBES THIS CHILD DURING THE PAST MONTH.

If the child always behaved that way, circle 6.
If the child very often behaved that way, circle 5.
If the child fairly often behaved that way, circle 4.
If the child sometimes behaved that way, circle 3.
If the child almost never behaved that way, circle 2.
If the child never behaved that way, circle 1.

PLEASE REMEMBER THAT THE ITEMS REFER TO THE PAST MONTH.

	Always	Very Often	Fairly Often	Sometimes	Almost Never	Never	
A. Acts too young for his or her age	6	5	4	3	2	1	13/
B. Argues a lot	6	5	4	3	2	1	14/
C. Can't concentrate or pay attention for long	6	5	4	3	2	1	15/
D. Disobedient at home	6	5	4	3	2	1	16/
E. Likes to be alone	6	5	4	3	2	1	17/
F. Lying or cheating	6	5	4	3	2	1	18/
G. Not liked by other children	6	5	4	3	2	1	19/
H. Poorly coordinated or clumsy	6	5	4	3	2	1	20/
I. Runs away from home	6	5	4	3	2	1	21/
J. Speech problems (e.g., stuttering, hard to understand)	6	5	4	3	2	1	22/

PLEASE CONTINUE ON THE NEXT PAGE

CARD 04

	Always	Very Often	Fairly Often	Some-times	Almost Never	Never	DO NOT WRITE IN THIS SPACE
K. Steals at home	6	5	4	3	2	1	23/
L. Steals outside home	6	5	4	3	2	1	24/
M. Stubborn, sullen or irritable	6	5	4	3	2	1	25/
N. Temper tantrums or hot temper	6	5	4	3	2	1	26/
O. Withdrawn, doesn't get involved with others	6	5	4	3	2	1	27/

MEDICINES TAKEN

57. THIS QUESTION IS ABOUT THE PRESCRIPTION MEDICINES THIS CHILD HAS TAKEN IN THE PAST 48 HOURS (2 DAYS). IT IS VERY IMPORTANT THAT YOU ANSWER ONLY FOR THAT TIME (THE PAST 48 HOURS) AND ONLY ABOUT PRESCRIPTION MEDICINES THAT THE CHILD ACTUALLY TOOK DURING THAT PERIOD.

DID THIS CHILD TAKE ANY PRESCRIPTION MEDICINES IN THE PAST 48 HOURS?

Yes .... 1 —*Answer Q. 57-A-B* 28/

No .... 2 —*Go to page 27*

57-A. HOW MANY DIFFERENT PRESCRIPTION MEDICINES IN THE PAST 48 HOURS? (Write in number)

________ prescription medicines 29/

CARD 04

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